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63
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Vol. XLII. }

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The Auk

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EDITOR
WITMER STONE



VOLUME XXXIV

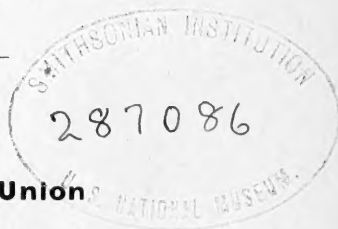
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SALVADORI, COUNT TOMMASO, Royal Zoöl. Museum, Turin, Italy....	1883
SCHALOW, PROF. HERMAN, Hohenzollerndamm 50, Berlin-Grünewald, Germany.....	(1884) 1911

CORRESPONDING FELLOWS.

ABBOTT, DR. WILLIAM L., Aldine Hotel, Philadelphia, Pa.....	1916
ALFARO, ANASTASIO, San José, Costa Rica.....	1888
ALPHÉRAKY, SERGIUS N., Imperial Acad. Sci., Petrograd, Russia...	1913
ARRIGONI DEGLI ODDI, COUNT ETTORE, Univ. of Padua, Padua, Italy.	1900
BANNERMAN, DAVID ARMITAGE, 11 Washington House, Basil St., Lon- don, England.....	1916
BIANCHI, DR. VALENTINE, Imperial Zool. Museum, Petrograd, Russia	1919
BONHOTE, JOHN LEWIS, Gade Spring Lodge, Hemel Hempstead, Herts, England.....	1911
BUREAU, DR. LOUIS, École de Médecine, Nantes, France.....	1884
BÜTTIKOFER, DR. JOHANNES, Zoölogical Garden, Rotterdam, Holland.	1886
CAMPBELL, ARCHIBALD JAMES, Custom House, Melbourne, Australia.	1902
CARRIKER, M. A., Jr., Apartado 51, Santa Marta, Colombia...	(1907) 1912
CHAMBERLAIN, MONTAGUE, Cambridge, Mass.....	(Founder) 1901
CHUBB, CHARLES, British Museum (Nat. Hist.) Cromwell Road, Lon- don, S. W.....	1911
CLARKE, WILLIAM EAGLE, Royal Scottish Museum, Edinburgh.....	1889
DABBENE, DR. ROBERTO, Buenos Aires, Argentina.....	1916
DALGLEISH, JOHN J., Brankston Grange, Bogside Station, Alloa, Scotland.....	1883
DOLE, SANFORD B., Honolulu, Hawaiian Islands.....	1883
ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna.....	1883
EVANS, ARTHUR HUMBLE, 9 Harvey Road, Cambridge, England....	1899
FEILDEN, COL. HENRY WEMYSS, Burwash, England	1884
FERRARI-PEREZ, PROF. FERNANDO, Tacubaya, D. F., Mexico.....	1885
FREKE, PERCY EVANS, Southpoint, Limes Road, Folkstone, England.	1883

GIRTANNER, Dr. A., St. Galle, Switzerland.....	1884
GODWIN-AUSTEN, Lieut.-Col. HENRY HAVERSHAM, Nore, Hascombe, Godalming, Surrey, England.....	1884
GOELDI, Prof. Dr. EMIL A., Zieglerstrasse 36, Bern, Switzerland.....	1903
GRANDIDIER, ALFRED, 6 Rond-Point des Champs Elysées, Paris.....	1883
GURNEY, JOHN HENRY, Keswick Hall, Norwich, England.....	1883
HAAGNER, ALWYN KARL, Pretoria, Transvaal.....	1916
HALL, ROBERT, Rest Harrow, Hobart, Tasmania.....	1916
HARTING, JAMES EDMUND, Edgewood, Weybridge, Surrey, England..	1883
HENNICKE, Dr. CARL R., Gera, Reuss, Germany.....	1907
HENSON, HARRY V., Yokohama, Japan.....	1888
HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, West- bourne Park, London, W.....	1895
KRÜPER, Dr. THEOBALD J., University Museum, Athens, Greece....	1884
LEGGE, Col. WILLIAM V., Cullenswood House, St. Mary's, Tasmania..	1891
LE SOUËF, DUDLEY, Zoölogical Gardens, Melbourne, Australia.....	1911
LÖNNBERG, Dr. EINAR, Zoological Museum, Stockholm, Sweden....	1916
LOWE, Dr. PERCY R., The Hatch, Windsor, England.....	1916
MACFARLANE, RODERICK, Winnipeg, Manitoba.....	1886
MADARÁSZ, Dr. JULIUS VON, National Museum, Budapest, Hungary..	1884
MATHEWS, GREGORY M., Langley Mount, Watford, Herts, England..	1911
MÉNÉGAUX, Dr. AUGUSTE, Paris, France.....	1916
MENZBIER, Prof. Dr. MICHAEL, Imperial Society of Naturalists, Moscow, Russia.....	1884
MILLAIS, JOHN GUILLE, Compton's Brow, Horsham, England.....	1911
NAMIYE, M., Tokio, Japan.....	1886
NICHOLSON, FRANCIS, The Knoll, Windermere, Westmoreland, Eng- land.....	1884
NORTH, ALFRED J., Australian Museum, Sydney, New South Wales..	1902
OGILVIE-GRANT, WILLIAM ROBERT, British Museum (Nat. Hist.), Cromwell Road, London, S. W.....	1899
PALMÉN, Dr. J. T., Helsingfors, Finland.....	1883
RAMSEY, E. P., Sydney, New South Wales.....	1884
RINGER, FREDERIC, Nagasaki, Japan.....	1888
SCLATER, WILLIAM LUTLEY, 10 Sloane Court, Chelsea, London, S. W..	1906
SNETHLAGE, Dr. EMILIA, Museu Goeldi, Pará, Brazil.....	1915
SUSHKIN, Dr. PETER, University, Kharkov, Russia.....	1903
THEEL, Dr. HJALMAR, University of Upsala, Upsala, Sweden.....	1884
TSCHUSI ZU SCHMIDHOFFEN, VICTOR, RITTER VON, Villa Tännenhof, bei Hallein, Salzburg, Austria.....	1884
VAN OORT, EDWARD DANIEL, Museum Nat. Hist., Leyden, Holland..	1913
WATERHOUSE, F. H., 3 Hanover Square, London, W.....	1889
WINGE, Dr. HERLUF, Univ. Zoölogical Museum, Copenhagen, Den- mark.....	1903
WITHERBY, HARRY FORBES, 3 Cannon Place, Hampstead, England..	1916
WORCESTER, Prof. DEAN C., Manila, P.I.....	1903
ZELEDON, Don JOSÉ C., San José, Costa Rica.....	1884

MEMBERS.

- ALLEN, ARTHUR A., McGraw Hall, Cornell University, Ithaca, N. Y.
(1909)1914
- ALLEN, FRANCIS H., 4 Park St., Boston, Mass. (1888)1901
- ALLEN, Dr. GLOVER M., 234 Berkeley St., Boston, Mass. (1896)1904
- ANDERSON, Dr. RUDOLPH M., Museum of Geological Survey, Ottawa,
Canada. (1907) 1914
- ATTWATER, H. P., 2120 Genesee St., Houston, Texas. (1891)1901
- BAILEY, VERNON, 1834 Kalorama Ave., Washington, D. C. (1887)1901
- BAILEY, MRS. VERNON, 1834 Kalorama Ave., Washington, D. C. (1885)1901
- BAILY, WILLIAM L., Ardmore, Pa. (1886)1901
- BARBOUR, Dr. THOMAS, Mus. Comp. Zoölogy, Cambridge, Mass. (1903)1914
- BARTSCH, Prof. PAUL, U. S. Nat. Museum, Washington, D. C. (1896) 1902
- BERGTOLD, Dr. W. H., 1159 Race St., Denver, Colo. (1889)1914
- BOND, FRANK, 3127 Newark St., N. W., Washington, D. C. (1887)1901
- BOWLES, JOHN HOOPER, The Woodstock, Tacoma, Wash. (1891)1910
- BRAISLIN, Dr. WILLIAM C., 425 Clinton Ave., Brooklyn, N. Y. (1894) 1902
- BROOKS, ALLAN, Okanagan Landing, B. C. (1902)1909
- BRYAN, WILLIAM ALANSON, College of Hawaii, Honolulu, Hawaiian
Islands. (1898)1901
- BURNS, FRANK L., Berwyn, Pa. (1891)1901
- BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind. (1885)1901
- CHAMBERS, W. LEE, Eagle Rock, Cal. (1907)1913
- CLARK, AUSTIN HOBART, 1726 18th St., N. W., Washington, D. C. (1899)1905
- CLARK, Dr. HUBERT LYMAN, Museum of Comparative Zoölogy, Cam-
bridge, Mass. (1886)1902
- DAGGETT, FRANK S., Museum, Exposition Park, Los Angeles, Cal.
(1889)1901
- DAWSON, WILLIAM LEON, R. D., No. 3, Box 110, Santa Barbara, Cal.
(1895)1905
- DEANE, WALTER, 29 Brewster St., Cambridge, Mass. (1897)1901
- EATON, ELON HOWARD, 678 Main St., Geneva, N. Y. (1895) 1907
- EVERMANN, Prof. BARTON W., Cal. Academy of Sciences, San Fran-
cisco, Cal. (1883)1901
- FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore. (1904)1907
- GAULT, BENJAMIN TRUE, Glen Ellyn, Ill. (1885)1903
- GOLDMAN, EDWARD ALFONSO, Biological Survey, Washington, D. C.
(1897)1902
- HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass. (1911) 1916
- HOFFMANN, RALPH, 11 W. Concord Ave., Kansas City, Mo. (1893)1901
- HOLLISTER, NED, Nat. Zoölogical Park, Washington, D. C. (1894) 1910
- HOWELL, A. BRAZIER, Covina, Cal. (1909) 1916
- HOWELL, ARTHUR H., 2919 S. Dakota Ave., Washington, D. C. (1889)1902

- JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa. . (1889)1904
 JEFFRIES, WILLIAM AUGUSTUS, 11 Pemberton Square, Boston, Mass.
 (1883)1901
 JOB, HERBERT K., 291 Main St., West Haven, Conn. (1896)1901
 JORDAN, Prof. DAVID STARR, Stanford University, Cal. (1885)1901
 KALMBACH, EDWIN R., Biological Survey, Washington, D. C. . (1910)1915
 KENNARD, F. H., Dudley Road, Newton Centre, Mass. (1892)1912
 KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C. (1883)1902
 LAW, J. EUGENE, 1834 El Cerrito Place, Hollywood, Cal. (1907) 1916
 MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass. . . (1890)1901
 MAILLIARD, JOHN W., 230 California St., San Francisco, Cal. . (1895)1901
 MILLER, Mrs. OLIVE THORNE, 5928 Hays Ave., Los Angeles, Cal. (1887)1901
 MOORE, ROBERT THOMAS, Haddonfield, N. J. (1898)1914
 MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa. (1887)1903
 MORRIS, ROBERT O., 82 Temple St., Springfield, Mass. (1888)1904
 MURDOCH, JOHN, 16 High Rock Way, Allston, Mass. (1883)1901
 MURPHY, ROBERT C., Museum Brooklyn Institute, Eastern Parkway,
 Brooklyn, N. Y. (1905)1914
 NICHOLS, JOHN TREADWELL, Am. Mus. Nat. Hist., New York, N. Y.
 (1901)1914
 NORTON, ARTHUR H., Museum Natural History, 22 Elm St., Port-
 land, Maine. (1890)1902
 PEARSON, T. GILBERT, 1974 Broadway, New York, N. Y. (1891) 1902
 PHILLIPS, JOHN C., Wenham, Mass. (1904)1912
 PREBLE, EDWARD A., Biological Survey, Washington, D. C. . . (1892)1901
 RATHBUN, SAMUEL F., 217 14th Ave., N., Seattle, Wash. . . . (1893)1902
 RHOADS, SAMUEL N., 81 Haddon Ave., Haddonfield, N. J. . . . (1885)1901
 RILEY, JOSEPH H., U. S. National Museum, Washington, D. C. (1897)1905
 RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C.
 (1885)1901
 ROBINSON, Col. WIRT, U. S. A., West Point, N. Y. (1897)1901
 SETON, ERNEST THOMPSON, Greenwich, Conn. (1883)1901
 *SHERMAN, Miss ALTHEA R., National via McGregor, Iowa. . (1907)1912
 SHIRAS, Hon. GEORGE, 3d, Stoneleigh Court Washington, D. C. (1907)1915
 STEPHENS, FRANK, Nat. Hist. Museum, Balboa Park, San Diego, Cal.
 (1883) 1901
 STRONG, Dr. REUBEN M., Vanderbilt Medical School, Nashville, Tenn.
 (1889) 1903
 SWALES, BRADSHAW HALL, Mus. of Zoöl., Ann Arbor, Mich. (1902)1909
 TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada
 (1902)1909
 THAYER, JOHN ELIOT, Lancaster, Mass. (1898)1905
 TOWNSEND, CHARLES H., Aquarium, Battery Park, New York, N. Y.
 (1883)1901

TOWNSEND, DR. CHARLES WENDELL, 76 Marlborough St., Boston, Mass.....	(1901)1905
TROTTER, DR. SPENCER, Swarthmore College, Swarthmore, Pa. . .	(1888)1901
WARREN, EDWARD ROYAL, 20 West Caramillo St., Colorado Springs, Colo.....	(1902)1910
WAYNE, ARTHUR T., Mt. Pleasant, S. C.....	(1905)1906
WETMORE, ALEX., Biological Survey, Washington, D. C.....	(1908)1912
WILLETT, GEORGE, 2123 Court St., Los Angeles, Cal.....	(1912)1913
WOLCOTT, DR. ROBERT H., State University, Lincoln, Neb....	(1901)1903
WOOD, NORMAN A., Museum Univ. of Mich., Ann Arbor, Mich..	(1904)1912
WRIGHT, MRS. MABEL OSGOOD, Fairfield, Conn.....	(1895)1901

ASSOCIATES.

ABBOTT, CLINTON GILBERT, Orchard Hill, Rhinebeck, N. Y.....	1898
ADAMS, BENJAMIN, 476 5th Ave., New York, N. Y.....	1911
ADAMS, WALLACE, U. S. Indian Service, Florence, Ariz.....	1901
ADAMS, DR. Z. B., 43 Cottage Farm Rd., Brookline, Mass.....	1908
AIKEN, HON. JOHN, Superior Court, Court House, Boston, Mass....	1905
AIMAR, DR. CHARLES PONS, 4 Vanderhorst St., Charleston, S. C....	1916
ALEXANDER, MISS ANNIE M., 92 Sea View Ave., Piedmont, Cal....	1911
ALLEN, MARY P., 206 Moore St., Hackettstown, N. J.....	1913
ANDERSON, ERNEST M., Provincial Museum, Victoria, B. C.....	1915
ANDERSON, MRS. J. C., Great Barrington, Mass.....	1903
ANGELL, WALTER A., 33 Westminster St., Providence, R. I.....	1901
ANTHONY, H. E., Amer. Mus. Nat. Hist., New York, N. Y.....	1911
ARMSTRONG, EDWARD E., 207 N. Michigan Ave., Chicago, Ill.....	1904
ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.....	1894
ARNOLD, DR. W. W., 1st Nat. Bank Bldg., Colorado Springs, Colo...	1910
ARTHUR, STANLEY CLISBY, 1109 Henry Clay Ave., New Orleans, La...	1916
ASPINWALL, MRS. CLARENCE A., 1839 Wyoming Ave., Washington, D. C.....	1916
AVIS, EDWARD, Box 56, Enfield, Conn.....	1908
AYRES, MISS MARY ADELINE, 119 High St., Medford, Mass.....	1915
BABCOCK, DEAN, Estes Park, Colo.....	1911
BABCOCK, DR. HAROLD LESTER, Woodleigh Road, Dedham, Mass....	1916
BADÉ, DR. WM. FREDERIC, 323 Marlborough St., Boston, Mass.....	1916
BAGG, AARON C., 70 Fairfield Ave., Holyoke, Mass.....	1916
BAGG, EGBERT, JR., 406 Genesee St., Utica, N. Y.....	1916
BAILEY, DR. B. H., Coe College, Cedar Rapids, Ia.....	1913
BAILEY, PROF. GUY A., Geneseo, N. Y.....	1910
BAILEY, SAMUEL WALDO, 64 S. Mountain Road, Pittsfield, Mass....	1909

BAKER, JOHN H., Nat. Cash Register Co., Dayton, Ohio.....	1911
BALDWIN, ROGER N., 3739 Windsor Place, St. Louis, Mo.....	1904
BALES, DR. BLENN R., 149 W. Main St., Circleville, Ohio.....	1907
BALKAM, CLIFFORD MANN, Box 228, Colorado Springs, Colo.....	1916
BALL, MRS. BENNET F., Oakville, Conn.....	1905
BALL, DAVID S., Spuyten Duyvil, New York, N. Y.....	1913
BALL, MISS HELEN AUGUSTA, 43 Laurel St., Worcester, Mass.....	1893
BALL, DR. JAS. P., 5001 Frankford Ave., Philadelphia, Pa.....	1911
BANKS, MISS MARTHA B., Westport, Conn.....	1911
BARBOUR, REV. ROBERT, Y. M. C. A., Montclair, N. J.....	1902
BARKER, MRS. MERLE TAFT, 178 High St., Taunton, Mass.....	1915
BARNARD, JUDGE JOB, 1306 Rhode Island Ave., Washington, D. C.....	1886
BARNES, CLAUDE T., Walker Bank Bldg., Salt Lake City, Utah....	1908
BARNES, HON. R. MAGOON, Lacon, Ill.....	1889
BARRETT, CHAS. H. M., 1339 Valley Place, S. E., Washington, D. C.....	1912
BARRETT, HAROLD LAWRENCE, 704 Centre St., Jamaica Plain, Mass...	1909
BARROWS, IRA, 512 Park Ave., New York, N. Y.....	1916
BARRY, MISS ANNA K., 5 Bowdoin Ave., Dorchester, Mass.....	1907
BARTLETT, MISS MARY F., 227 Commonwealth Ave., Boston, Mass...	1912
BARTLETT, WM. M., Silver Hill Road, South Lincoln, Mass.....	1913
BARTRAM, EDWIN B., Strafford, Pa.....	1913
BATTEN, GEORGE, 381 Fourth Ave., New York, N. Y.....	1911
BATTEN, GEORGE, JR., 93 Union St., Montclair, N. J.....	1914
BAYNES, ERNEST H., Meriden, N. H.....	1912
BECK, ROLLO HOWARD, San José, R. D. 21, Cal.....	1894
BELL, Prof. W. B., Biological Survey, Washington, D. C.....	1912
BEMIS, BENJ. FRANKLIN, Gleasondale, Mass.....	1916
BENNETT, REV. GEO., Iowa City, Ia.....	1913
BENNETT, WILLIAM J., 1941 1st St. N. W., Washington, D. C.....	1901
BENSON, C. STANLEY, 75 Plymouth St., North Abington, Mass.....	1915
BETTS, NORMAN DE WITT, Linwood, Utah.....	1908
BICKNELL, MRS. F. T., 319 S. Normandie Ave., Los Angeles, Cal...	1913
BIDDLE, MISS EMILY WILLIAMS, 122 S. 22nd St., Philadelphia, Pa....	1898
BIGELOW, ALBERT F., 84 State St., Boston, Mass.....	1910
BIGELOW, DR. LYMAN F., 80 Winter St., Norwood, Mass.....	1914
BLACKWELDER, ELIOT, Natural History Bldg., Urbana, Ill.....	1895
BLOOMFIELD, MRS. C. C., 723 Main St., W., Jackson, Mich.....	1901
BOARDMAN, MISS E. D., 416 Marlborough St., Boston, Mass.....	1906
BODINE, MRS. DONALDSON, 4 Mills Place, Crawfordsville, Ind.....	1916
BOGARDUS, MISS CHARLOTTE, Elm St., Coxsackie, N. Y.....	1909
BOGERT, WILLIAM S., 2610 Eldridge St., Bellingham, Wash.....	1904
BOLLES, MRS. FRANK, 6 Berkeley St., Cambridge, Mass.....	1912
BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo...	1909
BOND, HARRY L., Lakefield, Minn.....	1908
BORLAND, WM. G., 7 Wall St., New York, N. Y.....	1911
BOSSON, CAMPBELL, 30 State St., Boston, Mass.....	1906

BOULTON, W. RUDYUD, JR., 338 1st St., Beaver, Pa.....	1915
BOURNE, THOS. L., Hamburg, N. Y.....	1914
BOWDISH, B. S., Demarest, N. J.....	1891
BOWDISH, Mrs. B. S., Demarest, N. J.....	1902
BOWDITCH, HAROLD, 60 Harvard Ave., Brookline, Mass.....	1900
BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.....	1913
BOWMAN, DAN H., Drawer D, Mizpah, Mont.....	1916
BOYLE, HOWARTH S., Amer. Mus. Nat. Hist., New York, N. Y.....	1916
BOYNTON, CHARLES T., 1005 S. Sheridan Road, Highland Park, Ill..	1912
BRACKEN, Mrs. HENRY M., 1010 Fourth St., S. E., Minneapolis, Minn.	1897
BRADBURY, W. C., 1440 Race St., Denver, Colo.....	1915
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.....	1902
BRANDRETH, COURTENAY, Ossining, N. Y.....	1905
BRANDRETH, FRANKLIN, Ossining, N. Y.....	1889
BRANDT, HERBERT W., 2025 East 88 St., Cleveland, Ohio.....	1915
BREWSTER, EDWARD EVERETT, 316 East C St., Iron Mountain, Mich.	1893
BREWSTER, Mrs. WILLIAM, 145 Brattle St., Cambridge, Mass.....	1912
BRIDGE, EDMUND, 52 Wyman St., West Medford, Mass.....	1910
BRIDGE, Mrs. EDMUND, 52 Wyman St., West Medford, Mass.....	1902
BRIGGS, JOSEPH S., 1372 Powell St., Norristown, Pa.....	1916
BRIMLEY, H. H., Raleigh, N. C.....	1904
BRISTOL, JOHN I. D., 1 Madison Ave., New York, N. Y.....	1907
BRITTEN, G. S., 807 Walnut Ave., Syracuse, N. Y.....	1913
BROCK, Dr. HENRY HERBERT, 687 Congress St, Portland, Me.....	1894
BROCKWAY, ARTHUR W., Hadlyme, Conn.....	1912
BROOKS, Rev. EARLE AMOS, 419 N. River Ave., Weston, W. Va.....	1892
BROOKS, W. SPRAGUE, 234 Berkeley St., Boston, Mass.....	1907
BROOKS, MAURICE GRAHAM, French Creek, W. Va.....	1915
BROWN, Miss ANNIE H., 31 Maple St., Stoneham, Mass.....	1909
BROWN, EDWARD J., 1609 S. Van Ness Ave., Los Angeles, Cal.....	1891
BROWN, HARRY A., 40 Talbot St., Lowell, Mass.....	1912
BROWN, Mrs. HENRY TEMPLE, Lancaster, Mass.....	1912
BROWN, PHILIP G., 85 Vaughan St., Portland, Me.....	1911
BROWN, STEWARDSON, 20 E. Penn St., Germantown, Philadelphia, Pa..	1895
BROWN, WM. JAMES, 250 Oliver Ave., Westmount, Quebec.....	1908
BROWNING, WM. HALL, 16 Cooper Square, New York, N. Y.....	1911
BRUEN, FRANK, 69 Prospect St., Bristol, Conn.....	1908
BRUMBAUGH, CHALMERS S., 1020 Cathedral St., Baltimore, Md....	1916
BRYANT, HAROLD CHILD, Mus. Vert. Zool., Univ. of California, Berkeley, Cal.....	1913
BUNKER, CHARLES D., Kansas Univ. Museum, Lawrence, Kan.....	1916
BUCKWALTER, Mrs. A. I., Union, Miss.....	1915
BURGESS, JOHN KINGSBURY, Chestnut St., Dedham, Mass.....	1898
BURLEIGH, THOS. D., 825 N. Negley Ave., Pittsburgh, Pa.....	1913
BURNETT, WILLIAM L., State Agric. College, Fort Collins, Colo.....	1895
BURTCH, VERDI, Branchport, N. Y.....	1903

BURTON, E. ROY, 60 Park Ave., Delaware, Ohio.....	1916
CABOT, LOUIS, Brookline, Mass.....	1904
CADUC, EUGENE E., 512 Massachusetts Ave., Boston, Mass.....	1910
CAESAR, HENRY A., 50 Union Square, New York, N. Y.....	1916
CALLENDER, JAMES PHILLIPS, 32 Broadway, New York, N. Y.....	1903
CAMPBELL, MISS CLARA D., 1253 Beacon St., Brookline, Mass.....	1913
CANTWELL, GEORGE G., 901 W. Main Ave., Puyallup, Wash.....	1916
CARPENTER, REV. CHARLES KNAPP, 174 Forest Ave., Oak Park, Ill... 1894	
CARPENTER, GEORGE I., 129 Dean St., Brooklyn, N. Y.....	1907
CARPENTER, HALL B., Kappa Sigma House, Amherst, Mass.....	1916
CARRIGER, H. W., 5185 Trask St., Fruitvale Station, Oakland, Cal... 1913	
CARTER, JOHN D., Lansdowne, Pa.....	1907
CASE, HARRY A., 448 Hope St., Providence, R. I.....	1898
CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.....	1885
CHAPIN, Prof. ANGIE CLARA, 25 Freeman Cottage, Wellesley College, Wellesley, Mass.....	1896
CHAPIN, JAMES P., Amer. Mus. of Natural History, New York, N. Y.. 1906	
CHAPMAN, Mrs. F. M., Englewood, N. J.....	1908
CHAPMAN, ROYAL N., Dept. Animal Biology, Univ. of Minnesota, Minneapolis, Minn.....	1911
CHASE, OMAR P., Andover, Mass.....	1916
CHASE, SIDNEY, 244 Marlborough St., Boston, Mass.....	1904
CHEESMAN, MORTON R., R. F. D. 3 Box 61, Murray, Utah.....	1911
CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....	1901
CLARK, CLARENCE H., Lubec, Me.....	1913
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....	1895
CLARKE, CHARLES E., 11 Chetwynd Road, Tufts College, Mass.....	1907
CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.....	1896
CLARKE, Miss MARY F., Bristow, Va.....	1916
CLEAVES, HOWARD H., Public Museum, New Brighton, N. Y.....	1907
CLEVELAND, Dr. CLEMENT, 11 W. 11th St., New York, N. Y.....	1903
CLEVELAND, Miss LILIAN, Woods Edge Road, West Medford, Mass.. 1906	
COALE, HENRY K., Highland Park, Ill.....	1883
COBB, Miss ANNIE W., 20 Amsden St., Arlington, Mass.....	1909
COBB, Dr. STANLEY, 206 E. Chase St., Baltimore, Md.....	1909
CODY, Prof. WALTER GUYTON, 69 High St., Middletown, Conn.....	1916
COFFIN, Mrs. PERCIVAL B., 3232 Groveland Ave., Chicago, Ill.....	1905
COGGINS, HERBERT L., 2929 Piedmont Ave., Berkeley, Cal.....	1913
COLBURN, ALBERT E., 806 S. Broadway, Los Angeles, Cal.....	1891
COLE, Dr. LEON J., College of Agric., Univ. of Wis., Madison, Wis.... 1908	
COMMONS, Mrs. F. W., 608 Chamber of Commerce, Minneapolis, Minn. 1902	
CONEY, Mrs. GEO. H., R. F. D., Box 25, Windsor, Conn.....	1906
COOK, FREDERICK W., 1604 East Harrison St., Seattle, Wash.....	1915
COOK, Miss LILIAN GILLETTE, Long Lea, Amherst, Mass.....	1899
COOKE, GEORGE J., Ambler, Pa.....	1916
COOKE, Miss MAY THACHER, 1328 Twelfth St., Washington, D. C.... 1915	

COPE, FRANCIS R., Jr., Dimock, Pa.....	1892
COPELAND, MANTON, 88 Federal St., Brunswick, Me.....	1900
CORRINGTON, JULIAN DANA, 406 University Ave., Ithaca, N. Y.....	1916
CRAIG, WALLACE, Univ. of Maine, Orono, Me.....	1912
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....	1893
CRANDALL, C. W., 10 Third St., Woodside, N. Y.....	1891
CRANDALL, LEE S., N. Y. Zool. Park, New York, N. Y.....	1909
CRANE, MISS CLARA L., Dalton, Mass.....	1904
CRANE, MRS. ZENAS, Dalton, Mass.....	1904
CREHORE, FREDERIC M., Box 1252, Boston, Mass.....	1913
CRESSY, MRS. A. S., Avon Road, Unionville, Conn.....	1912
CROSBY, MAUNSELL S., Rhinebeck, N. Y.....	1904
CUMMINGS, MISS EMMA G., 16 Kennard Road, Brookline, Mass.....	1903
CURRIE, ROLLA P., 632 Keefer Place N. W., Washington, D. C.....	1895
CURLIER, EDMONDE SAMUEL, 416 E. Chicago St., Portland, Ore.....	1894
CURRY, HASKELL BROOKS, 60 Bay State Road, Boston, Mass.....	1916
CURTIS, CHARLES P., 244 Beacon St., Boston, Mass.....	1915
CUSHMAN, MISS ALICE, 919 Pine St., Philadelphia, Pa.....	1910
DANA, MISS ADA, 488 Centre St., Newton, Mass.....	1912
DANA, WM. SHEPHERD, Moriches, N. Y.....	1916
DANE, MRS. ERNEST B., Chestnut Hill, Mass.....	1912
DANFORTH, STUART F., East Jaffrey, N. H.....	1916
DANKERS, CHARLES E., Corning, Mo.....	1916
DAVENPORT, MRS. ELIZABETH B., Brattleboro, Vt.....	1898
DAVIDSON, MRS. FRANCIS S., 1302 W., S. Grand Ave., Springfield, Ill..	1912
DAVIS, CHARLES H., 700 N. Hamilton St., Saginaw, W. S., Mich....	1906
DAY, CHESTER SESSIONS, 1711 Commonwealth Ave., Boston, Mass...	1897
DEAN, R. H., 720 Quintard Ave., Anniston, Ala.....	1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....	1899
DECKER, HAROLD K., 250 Livermore Ave., West New Brighton, N. Y..	1916
DELOACH, R. J. H., 6605 Harvard Ave., Chicago, Ill.....	1910
DENSMORE, MISS MABEL, 629 4th St., Red Wing, Minn.....	1910
DERBY, RICHARD, 116 E. 79th St., New York, N. Y.....	1898
DERBY, WILLIAM M., Jr., 4857 Kimbark Ave., Chicago, Ill.....	1916
DEWEY, DR. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.....	1900
DEXTER, LEWIS, 1889 Elm St., Manchester, N. H.....	1915
DICKEY, DONALD R., San Rafael Heights, Pasadena, Cal.....	1907
DICKEY, SAMUEL S., Waynesburg, Pa.....	1905
DILL, Prof. HOMER R., State Univ. of Iowa, Iowa City, Ia.....	1916
DILLE, FREDERICK M., 2927 W. 28th Ave., Denver, Colo.....	1892
DIONNE, C. E., Laval University, Quebec, Canada.....	1893
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.....	1891
DODSON, JOSEPH H., Kankakee, Ill.....	1909
DORN, Prof. LOUIS, Concordia College, Fort Wayne, Ind.....	1912
DRUMMOND, MISS MARY, 510 Spring Lane, Lake Forest, Ill.....	1904
DULL, MRS. A. P. L., 211 N. Front St., Harrisburg, Pa.....	1900

DUNLOP, ERIC B., St. Regis Hotel, Winnipeg, Man.....	1915
DURFEE, OWEN, Box 125, Fall River, Mass.....	1887
DURYEA, Miss ANNIE B., 62 Washington St., Newark, N. J.....	1911
DYKE, ARTHUR CURTIS, 205 Summer St., Bridgewater, Mass.....	1902
EASTMAN, Capt. FRANCIS, B., Ft. Leavenworth, Kan.....	1909
EATON, Miss MARY S., 8 Monument St., Concord, Mass.....	1909
EATON, SCOTT HARRISON, Box 653, Lawrenceville, Ill.....	1912
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....	1886
EDSON, WM. L. G., Highland Park, Rochester, N. Y.....	1916
EHINGER, Dr. CLYDE E., 100 W. Rosedale Ave., West Chester, Pa...	1904
EIFRIG, Prof. C. W. GUSTAVE, 504 Monroe Ave., Oak Park, Ill.....	1901
EIMBECK, Dr. AUGUST F., New Haven, Mo.....	1906
EKBLAW, WALTER ELMER, care of G. Ekblaw, Rantoul, Ill.....	1911
ELDRIDGE, ARTHUR S., South Lincoln, Mass.....	1912
ELLIOT, Mrs. J. W., 124 Beacon St., Boston, Mass.....	1912
ELLS, GEORGE P., Norwalk, Conn.....	1904
EMERSON, W. OTTO, Hayward, Cal.....	1916
EMMONS, RUPERT A., 17 T. St., N. E., Washington, D. C.....	1913
EMORY, Mrs. MARY DILLE, 156 Foundry St., Morgantown, W. Va...	1899
ERRETT, RUSSELL, Terrace Park, Ohio.....	1915
EVANS, Dr. EVAN M., 56 East 55th St., New York, N. Y.....	1916
EVANS, WILLIAM B., Moorestown, N. J.....	1897
FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....	1904
FARQUHAR, ARTHUR, York, Pa.....	1916
FAXON, ALLAN HART, 7 Edwards St., Southbridge, Mass.....	1916
FAY, DUDLEY B., 287 Beacon St., Boston, Mass.....	1916
FAY, S. PRESCOTT, 53 State St., Boston, Mass.....	1907
FELGER, ALVA HOWARD, North Side High School, Denver, Colo....	1898
FELL, Miss EMMA TREGO, 1534 N. Broad St., Philadelphia, Pa.....	1903
FINNEY, Mrs. E. S., St. Davids, Pa.....	1916
FISHER, Miss ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa.	1896
FISHER, Dr. G. CLYDE, American Mus. Nat. Hist., New York, N. Y...	1908
FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....	1898
FLEISCHER, EDWARD, 1591 Union St., Brooklyn, N. Y.....	1916
FLETCHER, Mrs. MARY E., Proctorsville, Vt.....	1898
FLOYD, CHARLES BENTON, 19 Woodbine St., Auburndale, Mass.....	1916
FOOT, Dr. NATHAN CHANDLER, Hyde Park, Mass.....	1916
FOOTE, Miss F. HUBERTA, 90 Locust Hill Ave., Yonkers, N. Y.....	1897
FORBES, ALEXANDER, Milton, Mass.....	1912
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....	1901
FOSTER, FRANK B., Haverford, Pa.....	1916
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.....	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....	1898
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....	1883
FRANCIS, NATHANIEL A., 35 Davis Ave., Brookline, Mass.....	1913
FRASER, DONALD, Johnstown, N. Y.....	1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....	1903

FRENCH, CHARLES H., Canton, Mass.....	1904
FRENCH, MRS. CHAS. H., Canton, Mass.....	1908
FROTHINGHAM, MRS. RANDOLPH, 113 Commonwealth Ave., Boston, Mass.....	1913
FRY, HENRY J., 224 Manheim St., Philadelphia, Pa.....	1916
FULLER, HENRY C., 1348 Euclid St., Washington, D. C.....	1916
FULLER, MRS. T. OTIS, Needham, Mass.....	1909
GABRIELSON, IRA N., Biological Survey, Washington, D. C.....	1912
GARDINER, CHARLES BARNES, 175 W. Main St., Norwalk, Ohio.....	1903
GARST, DR. JULIUS, 29 Oread St., Worcester, Mass.....	1916
GERTKEN, SEVERIN, Prof., St. Johns University, Collegeville, Minn.....	1912
GIANINI, CHAS. A., Poland, N. Y.....	1911
GIBSON, LANGDON, 5 Union St., Schenectady, N. Y.....	1887
GILMAN, M. FRENCH, Fort Bidwell, Cal.....	1907
GLADDING, MRS. JOHN R., 30 Stimson Ave., Providence, R. I.....	1912
GODING, EDWARD N., 73 Tremont St., Boston, Mass.....	1916
GOELITZ, WALTER A., 1622 Judson Ave., Ravinia, Ill.....	1916
GOLDMAN, LUTHER J., Pocatello, Idaho.....	1916
GOLSAN, LEWIS S., Box 97, Prattville, Ala.....	1912
GOODRICH, MISS JULIET T., 1210 Astor St., Chicago, Ill.....	1904
GORDON, HARRY E., 168 Asbury St., Rochester, N. Y.....	1911
GORST, CHARLES C., 2 Arnold Circle, Cambridge, Mass.....	1916
GOULD, ALFRED M., Malden, Mass.....	1916
GOULD, JOSEPH E., Arcadia, Fla.....	1889
GRAHAM, WM. J., Aledo, Ill.....	1909
GRANGER, MISS HELEN, Peterborough, N. H.....	1904
GRANGER, WALTER, Amer. Mus. Nat. Hist., New York, N. Y.....	1891
GRANT, WM. W., 600 Castle St., Geneva, N. Y.....	1910
GRAVES, MRS. CHARLES B., 4 Mercer St., New London, Conn.....	1905
GRAY, GEORGE M., Woods Hole, Mass.....	1916
GREENOUGH, HENRY VOSE, 1134 Beacon St., Brookline, Mass.....	1901
GREGORY, STEPHEN S., JR., 52 Cedar St., Chicago, Ill.....	1916
GRISCOM, LUDLOW, 20 Fifth Ave., New York, N. Y.....	1908
GROSS, DR. ALFRED O., 11 Boody St., Brunswick, Me.....	1907
GROSVENOR, GILBERT H., Nat. Geographic Soc., Washington, D. C.....	1914
GROW, MRS. EUGENE J., Lebanon, N. H.....	1916
GUILD, HENRY R., 102 Beacon St., Boston, Mass.....	1912
HADLEY, ALDEN H., Monrovia, Indiana.....	1906
HAGAR, J. A., 79 Washington Park, Newtonville, Mass.....	1914
HALLETT, GEO. H., JR., 199 Owen Ave., Landsdowne, Pa.....	1911
HANDLEY, CHARLES O., Lewisburg, W. Va.....	1916
HANKINSON, THOS. LEROY, 900 11th St., Charleston, Ill.....	1897
HARDON, MRS. HENRY W., Wilton, Conn.....	1905
HARPER, FRANCIS, 3001-24th St., N. E., Washington, D. C.....	1907
HARRINGTON, RALPH M., 953 Central Y. M. C. A., Brooklyn, N. Y.....	1915
HARRIS, HARRY, Kansas City, Mo.....	1911

HARRISON, RICHARD C., 142 Huntington St., New Haven, Conn.....	1916
HARVEY, JOHN L., Mercantile Bldg., Waltham, Mass.....	1916
HARVEY, Miss RUTH S., 1203 Ryland Ave., Cincinnati, O.....	1902
HASKELL, Miss SADIA, The Valois, Washington, D. C.....	1916
HATCH, Dr. ROYAL, 578 Washington St., Wellesley, Mass.....	1916
HATHAWAY, HARRY S., Box 1466, Providence, R. I.....	1897
HAVEMEYER, H. O., Jr., Mahwah, N. J.....	1893
HAZARD, Hon. ROWLAND G., Peace Dale, R. I.....	1885
HELME, ARTHUR H., Miller Place, N. Y.....	1888
HENDERSON, Judge JUNIUS, 627 Pine St., Boulder, Colo.....	1903
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNESSEY, FRANK C., 457 Albert St., Ottawa, Canada.....	1914
HERMANN, THEODORE L., 273 Neal Dow Ave., West New Brighton, N. Y.....	1916
HERRICK, FRANCIS H., Adelbert College, Cleveland, Ohio.....	1913
HERRICK, HAROLD, 123 William St., New York, N. Y.....	1905
HERRICK, NEWBOLD L., Cedarhurst, N. Y.....	1913
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, Mrs. THOMAS R., Box 491, Chautauqua, N. Y.....	1903
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....	1912
HINCKLEY, HENRY H., 50 West Hill Ave., Melrose Highlands, Mass.....	1912
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio.....	1899
HITCHCOCK, Mrs. ELEANOR B., 165 Buckingham St., Waterbury, Conn.....	1916
HIX, GEORGE E., 100 W. 91st St., New York, N. Y.....	1904
HODGE, Prof. CLIFTON FREMONT, Univ. of Ore., Eugene, Oregon.....	1899
HOLLAND, HAROLD MAY, 320 S. Grammercy Place, Los Angeles, Cal.....	1910
HOLLAND, Dr. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....	1899
HOLLISTER, WARREN D., 235 W. 63rd St., Chicago, Ill.....	1901
HOLMAN, RALPH H., 33 Chestnut St., Stoneham, Mass.....	1907
HOLT, ERNEST G., Biological Survey, Washington, D. C.....	1911
HOLTON, OLIVER W., 107 Edgemoor Lane, Ithaca, N. Y.....	1916
HONYWILL, ALBERT W., Jr., 50 Farmington Ave., Hartford, Conn.....	1907
HORSFALL, ROBERT BRUCE, 1457 E. 18 St., Portland, Ore.....	1905
HORTON, ISAAC CHESTER, 2207 Washington St., Canton, Mass.....	1916
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....	1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.....	1907
HUBBARD, C. ANDRESEN, 1249 E. Harrison St., Portland, Ore.....	1916
HUBBARD, Prof. MARIAN E., Wellesley College, Wellesley, Mass.....	1916
HUBBARD, RALPH, 516 Stewart Ave., Ithaca, N. Y.....	1916
HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.....	1891
HUBER, WHARTON, Gwynedd Valley, Pa.....	1915
HUDSON, Mrs. K. W., The Bellevue, Intervale, N. H.....	1911
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUSSEY, ROLAND F., 1308 E. Anne St., Ann Arbor, Mich.....	1915
INGALLS, CHARLES E., East Templeton, Mass.....	1885
INGERSOLL, ALBERT M., 908 F St., San Diego, Cal.....	1885

ISHAM, CHAS. B., 27 W. 67 St., New York, N. Y.....	1891
JACK, EDWIN L., 134 William St., Portland, Me.....	1916
JACKSON, HARTLEY H. T., Biological Survey, Washington, D. C.....	1910
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....	1888
JAMES, NORMAN, Catonsville, Md.....	1913
JENKS, CHAS. W., Bedford, Mass.....	1912
JENNEY, CHARLES F., 100 Gordon Ave., Hyde Park, Mass.....	1905
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....	1913
JENSEN, J. K., Wahpeton, N. D.....	1912
JEWETT, STANLEY G., Pendleton, Oregon.....	1906
JOHNSON, FRANK E., 16 Amackassin Terrace, Yonkers, N. Y.....	1888
JOHNSON, MRS. GRACE PETTIS, City Library Asso., Springfield, Mass.....	1908
JOHNSON, JULIUS M., 77 Herkimer St., Brooklyn, N. Y.....	1913
JOHNSON, WILBUR WALLACE, 144 Harrison St., East Orange, N. J.....	1914
JORDAN, A. H. B., Everett, Wash.....	1888
JUMP, MRS. EDWIN R., 97 Oakleigh Road, Newton, Mass.....	1910
JUSTICE, HENRY, 2023 Pine St., Philadelphia, Pa.....	1913
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KELLOGG, RALPH T., Silver City, N. M.....	1913
KELSO, Dr. JOHN E. H., Braeside, Edgewood, Lower Arrow Lake, B. C.....	1915
KENNEDY, Dr. HARRIS, Readville, Mass.....	1916
KENT, DUANE E., 47 West St., Rutland, Vt.....	1913
KENT, EDWIN C., 156 Broadway, New York, N. Y.....	1907
KERMODE, FRANCIS, Provincial Museum, Victoria, B. C.....	1904
KEYES, Prof. CHAS. R., Mt. Vernon, Ia.....	1904
*KIDDER, NATHANIEL T., Milton, Mass.....	1906
KIHN, WILFRED L., 755 Eastern Parkway, Brooklyn, N. Y.....	1913
KILGORE, WILLIAM, Jr., 132 Orlin Ave., S. E., Minneapolis, Minn.....	1906
KINGSBURY, FREDERICK S., Needham, Mass.....	1916
KING, LeROY, 20 E. 84th St., New York, N. Y.....	1901
KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....	1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....	1910
KIRKWOOD, FRANK C., R. F. D. 3, Monkton, Md.....	1892
KITTREDGE, JOSEPH, Jr., U. S. Forest Service, Missoula, Mont.....	1910
KLOSEMAN, Miss JESSIE E., 9 School St., Dedham, Mass.....	1909
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....	1906
KNAPP, MRS. HENRY A., 301 Quincy Ave., Scranton, Pa.....	1907
KNOLHOFF, FERDINAND WILLIAM, Amityville, N. Y.....	1890
KRETZMAN, Prof. P. E., 1230 St. Anthony Ave., St. Paul, Minn.....	1913
KUSER, ANTHONY R., Bernardsville, N. J.....	1908
KUSER, MRS. ANTHONY R., Bernardsville, N. J.....	1910
KUSER, JOHN DRYDEN, Bernardsville, N. J.....	1910
LACEY, HOWARD GEORGE, R. F. D. 1, Kerrville, Texas.....	1899
LADOW, STANLEY V., 622 W. 113th St., New York, N. Y.....	1913

LAMB, CHAS. R., 77 Franklin St., Boston, Mass.....	1912
LANCASHIRE, MRS. JAMES HENRY, 1069 5th Ave., New York, N. Y....	1909
LANG, HERBERT, Amer. Mus. Nat. Hist., New York, N. Y.....	1907
LANTZ, Prof. DAVID E., 1443 Belmont St., Washington, D. C.....	1885
LASELL, LOUISA W., 34 Jackson St., Cliftondale, Mass.....	1916
LATHAM, ROY, Orient, N. Y.....	1916
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.....	1902
LAWRENCE, JOHN L., Lawrence, N. Y.....	1915
LEISTER, CLAUDE W., 113 Osmun Place, Ithaca, N. Y.....	1916
LENGERKE, JUSTUS VON, 200 5th Ave., New York, N. Y.....	1907
LEOPOLD, ALDO, 135 S. 14th St., Albuquerque, N. Mex.....	1916
LEOPOLD, NATHAN, JR., 4754 Greenwood Ave., Chicago, Ill.....	1916
LEVEY, MRS. WILLIAM, Alton Bay, N. H.....	1915
LEWIS, HARRISON F., R. R. 2, Yarmouth, Nova Scotia.....	1912
LEWIS, MRS. HERMAN E., 120 Grove St., Haverhill, Mass.....	1912
LIGON, J. STOKLEY, P. O. Box 131, Albuquerque, New Mexico.....	1912
LINCOLN, FREDERICK CHARLES, Colo. Mus. Nat. Hist., Denver, Colo..	1910
LINGS, GEO. H., Richmond Hill, Cheadle, Cheshire, Eng.....	1913
LITTLE, LUTHER 2d, Sierra Madre, Cal.....	1913
LLOYD, HOYES, 11 Swanwick Ave., Toronto, Canada.....	1916
LORD, THOMAS HENRY, Newington, N. H.....	1916
LOW, ETHELBERT T., 30 Broad St., New York, N. Y.....	1907
LUCE, MRS. FRANCES P., Vineyard Haven, Mass.....	1912
LUM, EDWARD H., Chatham, N. J.....	1904
LUND, EDWARD G., 529 Beacon St., Boston, Mass.....	1915
MABBOTT, DOUGLAS C., Biological Survey, Washington, D. C.....	1916
MACDONALD, MISS HAZEL, Kersey, Colo.....	1916
MACKIE, DR. WILLIAM C., 54 Coolidge St., Brookline, Mass.....	1908
MACLAY, MARK, W., JR., 830 Park Ave., New York, N. Y.....	1905
MADDOCK, MISS EMELINE, 6386 Drexel Road, Overbrook, Pa.....	1897
MADISON, HAROLD L., Park Museum, Providence, R. I.....	1912
MAHER, J. E., 351 Communipaw Ave., Jersey City, N. J.....	1902
MAIN, FRANK H., 227 N. 18 St., Philadelphia, Pa.....	1913
MAITLAND, ROBERT L., 141 Broadway, New York, N. Y.....	1889
MANN, ELIAS P., Williamstown, Mass.....	1912
MAPLES, JAMES C., Port Chester, N. Y.....	1913
MARBLE, RICHARD M., Woodstock, Vt.....	1907
MARKS, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.....	1915
MARRS, MRS. KINGSMILL, 9 Commonwealth Ave., Boston, Mass....	1903
MARSHALL, ALFRED, 17 S. Jefferson St., Chicago, Ill.....	1916
MARSHALL, ELLA M. O., New Salem, Mass.....	1912
MARTIN, MISS JANET, Milford, Conn.....	1916
MARTIN, MISS MARIA ROSS, Box 365, New Brunswick, N. J.....	1902
MARX, EDWARD J. F., 207 Burke St., Easton, Pa.....	1907
MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.....	1912
MATTERN, WALTER I., 1042 Walnut St., Allentown, Pa.....	1912

MAY, DR. JOHN B., Cohasset, Mass.....	1916
MAYNARD, MRS. EDITH CLARK, Bryn Mawr, Pa.....	1916
McCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....	1900
McCONNELL, THOMAS S., 1813 Huey St., McKeesport Pa.....	1915
McCOOK, PHILIP J., 571 Park Ave., New York, N. Y.....	1895
McHATTON, DR. HENRY, 335 College St., Macon, Ga.....	1898
McILHENNY, EDWARD AVERY, Avery Island, La.....	1894
McINTIRE, MRS. HERBERT BRUCE, 4 Garden St., Cambridge, Mass...	1908
McLAIN, ROBERT BAIRD, McLain Building, Wheeling, W. Va.....	1893
McLANE, JAMES LATIMER, Jr., Garrison, Md.....	1915
McLEAN, HON. GEO. P., 1520 New Hampshire Ave., Washington, D. C.	1913
McMAHON, WALT F., 74 Eddy St., West Newton, Mass.....	1913
McMILLAN, MRS. GILBERT N., Gorham, N. H.....	1902
MEAD, MRS. E. M., 303 W. 84th St., New York, N. Y.....	1904
MEAD, MISS M., 975 Pine St., Winnetka, Ill.....	1916
MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.....	1912
MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.....	1913
MERRIAM, HENRY F., R. F. D. 1, Newton, N. J.....	1905
MERRILL, ALBERT R., Hamilton, Mass.....	1912
MERRILL, D. E., State College, New Mexico.....	1913
MERRILL, HARRY, 316 State St., Bangor, Maine.....	1883
MERSHON, W. B., Saginaw, Mich.....	1905
METCALF, Z. P., A. & M. College, West Raleigh, N. C.....	1913
MEYER, LIEUT. G. RALPH, C. D. of Oahu, Honolulu, H. I.....	1913
MEYER, MISS HELOISE, Lenox, Mass.....	1913
MILLER, MISS BERTHA STUART, Box 2, Palisade, N. J.....	1915
MILLER, CHAS. W., Jaffna College, Jaffna, Ceylon.....	1909
MILLER, MRS. ELISABETH C. T., 1010 Euclid, Cleveland, Ohio.....	1916
MILLS, ENOS A., Estes Park, Colo.....	1916
MINER, LEO D., 1836 Vernon St., N. W. Washington, D. C.....	1913
MITCHELL, CATHERINE ADAMS, Riverside, Ill.....	1911
MITCHELL, MASON, U. S. Consul, Apia, Samoa.....	1916
MITCHELL, DR. WALTON I., 603 Beacon Bldg., Wichita, Kan.....	1893
MOODY, HARRY LEE, Lake Wilson, Minn.....	1916
MOORE, RAYMOND W., Kensington, Md.....	1916
MORCOM, G. FREAN, Box 175, Huntington Beach, Cal.....	1886
MORLEY, S. GRISWOLD, 2535 Etna St., Berkeley, Cal.....	1911
MORRISON, ALVA, 53 Middle St., Braintree, Mass.....	1915
MORSE, HARRY GILMAN, Huron, Ohio.....	1912
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass..	1905
MOUSLEY, WM. HENRY, Hatley, Que., Canada.....	1915
MUNRO, J. A., Okanagan Landing, British Columbia, Canada.....	1913
MUNSON, Prof. WILLIAM H., 208 Winona St., Winona, Minn.....	1915
MURIE, O. J., 219 7th Ave. S, Moorhead, Minn.....	1913
MYERS, MRS. HARRIET W., 311 N. Ave. 66, Los Angeles, Cal.....	1906

MYERS, Miss LUCY F., Brookside, Poughkeepsie, N. Y.....	1898
NEWBERRY, WALTER C., Winnemucca, Nev.....	1916
NEWELL, Mrs. H. S., 2431 E. 5th St., Duluth, Minn.....	1912
NIMS, Mrs. LUCIUS, 17 Union St., Greenfield, Mass.....	1913
NOBLE, ELEANOR G., 66 Sparks St., Cambridge, Mass.....	1916
NOBLE, G. KINGSLEY, Mus. Comp. Zoölogy, Cambridge, Mass.....	1916
NOKES, Dr. I. D., 820 Marsh-Strong Bldg., Los Angeles, Cal.....	1915
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, EDWARD, 301 W. Springfield Ave., Philadelphia, Pa.....	1916
NORRIS, J. PARKER, Jr., 2122 Pine St., Philadelphia, Pa.....	1904
NORRIS, ROY C., 725 N. 10th St., Richmond, Ind.....	1904
NOWELL, JOHN ROWLAND, 300 Parkwood Boulevard, Schenectady, N. Y.....	1897
ODGEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
OHL, H. C., McKittrick, Cal.....	1913
OLDYS, HENRY, Silver Springs, Md.....	1896
*OLIVER, Dr. HENRY KEMBLE, 4 Newbury St., Boston, Mass.....	1900
ORDWAY, Miss ELIZABETH I., 20 Myrtle St., Winchester, Mass.....	1913
OSBORN, ARTHUR A., 58 Washington St., Peabody, Mass.....	1912
OTTEMILLER, FREE, 30 N. Pine St., York, Pa.....	1914
OVERTON, Dr. FRANK, Patchogue, N. Y.....	1909
*OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PAINE, AUGUSTUS G., Jr., 18 West 49th St., New York, N. Y.....	1886
PALMER, R. H., 222 Dietrich Block., Pocatello, Ida.....	1916
PALMER, Dr. SAMUEL C., Swarthmore College, Swarthmore, Pa.....	1899
PANGBURN, CLIFFORD H., Haverford, Pa.....	1907
PARKER, EDWARD LUDLOW, Nashawtue Road, Concord, Mass.....	1916
PAUL, LUCIUS H., 19 Aurora St., Rochester, N. Y.....	1908
PEABODY, Rev. P. B., Independence, Ia.....	1903
PECK, MORTON E., 1458 Court St., Salem, Ore.....	1909
PENARD, THOS. E., 16 Norfolk Rd., Arlington, Mass.....	1912
PENFIELD, Miss ANNIE L., 155 Charles St., Boston, Mass.....	1912
PENNINGTON, FRED ALBERT, 5529 Kenwood Ave., Chicago, Ill.....	1910
PEPPER, Dr. WM., 1811 Spruce St., Philadelphia, Pa.....	1911
PERKINS, ARTHUR W., 21 High St., Farmington, Me.....	1915
PERKINS, Dr. GEO. H., Univ. of Vt., Burlington, Vt.....	1912
PERRY, Dr. HENRY JOSEPH, 1720 Beacon St., Boston, Mass.....	1909
PETERS, ALBERT S., Lake Wilson, Minn.....	1908
PETERS, JAMES LEE, Harvard, Mass.....	1904
PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.....	1912
PHELPS, Mrs. J. W., Box 36, Northfield, Mass.....	1899
PHILIPP, PHILIP B., 220 Broadway, New York, N. Y.....	1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.....	1891
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.....	1912

PINCHOT, GIFFORD, 1617 Rhode Island Ave., Washington, D. C.....	1910
POE, Miss MARGARETTA, 1204 N. Charles St., Baltimore, Md.....	1899
POND, Miss ELLEN J., 160 Lexington Ave., New York, N. Y.....	1909
POOLE, EARL L., School Admin. Bldg., Reading, Pa.....	1916
PORTER, LOUIS H., Stamford, Conn.....	1893
POST, WILLIAM S., Bernardsville, N. J.....	1911
POTTER, JULIAN K., 563 Bailey St., Camden, N. J.....	1912
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....	1892
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....	1906
PRICE, LIGON, R. F. D. 1, Dunmore, W. Va.....	1913
PROVO, W. F., Wickliffe, Ohio.....	1916
PUMYEA, NELSON D. W., Mt. Holly, N. J.....	1916
PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.....	1893
QUIGGLE, JAMES C., 1410 M St., N. W., Washington, D. C.....	1915
RADETSKY, HARVEY D., 4433 Federal Boulevard, Denver, Colo.....	1915
RAMSDEN, CHAS. T., Box 146, Guantanamo, Cuba.....	1912
REA, PAUL M., Charleston Museum, Charleston, S. C.....	1912
REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....	1896
REDFIELD, Miss ELISA W., 248 Newbury St., Boston, Mass.....	1897
REED, ALEX, 123 E. Maiden St., Washington, Pa.....	1916
REGAR, H. SEVERN, 14 De Kalb St., Norristown, Pa.....	1916
REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.....	1901
REICHENBERGER, Mrs. VICTOR M., Hotel Essex, New York, N. Y.....	1916
RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.....	1895
RICE, JAMES HENRY, Jr., Summerville, S. C.....	1910
RICE, WARD J., Roachdale, Ind.....	1913
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass.....	1900
RIDDLE, ROBERT, 5242 Irving St., Philadelphia, Pa.....	1916
RIDDLE, S. EARL, Y. M. C. A., Chester, Pa.....	1916
RIDGWAY, JOHN L., Chevy Chase, Md.....	1890
RIKER, CLARENCE B., 43 Scotland Road, South Orange, N. J.....	1885
ROBBINS, CHARLES A., Onset, Mass.....	1914
ROBERTS, WILLIAM ELY, 207 McKinley Ave., Lansdowne, Pa.....	1902
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Cal.....	1911
ROBINSON, ANTHONY W., Haverford, Pa.....	1903
ROE, CHAS. M., 3012 Bathgate St., Cincinnati, O.....	1906
*ROGERS, CHARLES H., Amer. Mus. Nat. Hist., New York, N. Y.....	1904
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....	1896
ROPER, KENYON, 509 N. 4th St., Steubenville, Ohio.....	1911
ROSS, GEORGE H., 23 West St., Rutland, Vt.....	1904
ROSS, Dr. LUCRETIVS H., 507 Main St., Bennington, Vt.....	1912
ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Cal.....	1889
SACKETT, CLARENCE, Rye, N. Y.....	1910
SAGE, HENRY M., Menands Road, Albany, N. Y.....	1885

SANBORN, COLIN C., P. O. Box 50, Evanston, Ill.....	1911
SAUNDERS, ARETAS A., 143 East Ave., Norwalk, Conn.....	1907
SAVAGE, JAMES, 1097 Ellicott Sq., Buffalo, N. Y.....	1895
SAVAGE, WALTER GILES, Glenwood, Ark.....	1898
SAWYER, EDMUND J., Box 123, Watertown, N. Y.....	1915
SCHAEFER, OSCAR FREDERICK, U. S. Forest Service, Winslow, Ariz.....	1916
SCHENCK, FREDERIC, Lenox, Mass.....	1912
SCHERMERHORN, CHARLES F., Oak Knoll, Fla.....	1915
SCHORGER, A. W., Forest Products Laboratory, Madison, Wis.....	1913
SCOVILLE, SAMUEL, JR., Haverford, Pa.....	1916
SEARS, WILLIAM R., 73 Tremont St., Boston, Mass.....	1916
SERRILL, WILLIAM J., Haverford, Pa.....	1916
SHARPLES, ROBERT P., West Chester, Pa.....	1907
SHAW, CHAS. F., 676 Bedford St., North Abington, Mass.....	1912
SHAW, HENRY S., Dover, Mass.....	1916
SHAW, WILLIAM T., 900 Campus Ave., Pullman, Wash.....	1908
SHEARER, DR. AMON R., Mont Belvieu, Tex.....	1905
SHELDON, CHARLES, Woodstock, Vt.....	1911
SHELTON, ALFRED, Univ. of Oregon, Eugene, Ore.....	1911
SHIRLEY, GARLAND L., Dayton, Va.....	1916
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.....	1910
SHOEMAKER, HENRY, 71 Broadway, New York, N. Y.....	1912
SHOFFNER, CHARLES P., 1345 Arch St., Philadelphia, Pa.....	1915
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SILLIMAN, O. P., Salinas, Cal.....	1915
SILSBEE, THOMAS, 115 Marlborough St., Boston, Mass.....	1916
SILVER, JAMES, 2919 S. Dakota Ave., Washington, D. C.....	1916
SIMMONS, GEO. FINLAY, Rice Institute, Houston, Texas.....	1910
SKINNER, M. P., Summerville, S. C.....	1916
SMITH, AUSTIN PAUL, High Island, Texas.....	1911
SMITH, REV. FRANCIS CURTIS, 812 Columbia St., Utica, N. Y.....	1903
SMITH, Prof. FRANK, 913 West California Ave., Urbana, Ill.....	1909
SMITH, HORACE G., State Museum, State House, Denver, Colo.....	1888
SMITH, DR. HUGH M., 1209 M St. N. W., Washington, D. C.....	1886
SMITH, LESTER W., 60 Cottage St., Meriden, Conn.....	1916
SMITH, LOUIS IRVIN, JR., 3908 Chestnut St., Philadelphia, Pa.....	1901
SMITH, NAPIER, 46 Côtés des Neiges Road, Montreal, Quebec.....	1915
SMITH, Mrs. WALLIS CRAIG, 525 N. Michigan Ave., Saginaw W. S. Mich.....	1916
SMYTH, Prof. ELLISON A., JR., Polytechnic Inst., Blacksburg, Va....	1892
SNYDER, WILL EDWIN, 309 De Clark St., Beaver Dam, Wis.....	1895
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....	1911
SQUIER, THEO. L., 149 Freemont St., Battle Creek, Mich.....	1915
STANTON, Prof. J. Y., 410 Main St., Lewiston, Me.....	1883
STANWOOD, Miss CORDELIA JOHNSON, Ellsworth, Me.....	1909
STAPLETON, RICHARD, 219 High St., Holyoke, Mass.....	1916

STEPHENS, T. C., Morningside College, Sioux City, Iowa.....	1909
STEVENS, Dr. J. F., Box 1546, Lincoln, Neb.....	1908
STEWART, PHILLIP B., 1228 Wood Ave., Colorado Springs, Colo.....	1915
STILES, EDGAR C., 345 Main St., West Haven, Conn.....	1907
STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill. .	1912
STONE, CLARENCE F., Branchport, N. Y.....	1903
STORER, TRACY IRVIN, Mus. Vert. Zoölogy, Berkeley, Cal.....	1916
STREET, J. FLETCHER, Beverly, N. J.....	1908
STUART, FRANK A., 118 Green St., Marshall, Mich.....	1915
STUART, GEO. H., 3rd, 923 Clinton St., Philadelphia, Pa.....	1913
STURGIS, S. WARREN, Groton, Mass.....	1910
STURTEVANT, EDWARD, St. George's School, Newport, R. I.....	1896
SUGDEN, ARTHUR W., 52 Highland St., Hartford, Conn.....	1913
SURFACE, HARVEY ADAM, Harrisburg, Pa.....	1897
SWAIN, JOHN MERTON, Box 528, Farmington, Me.....	1899
SWEENEY, J. A., Forest Service, Halsey, Neb.....	1916
SWENK, MYRON H., 3028 Starr St., Lincoln, Neb.....	1904
TATNALL, SAMUEL A., 503 Hansberry St., Philadelphia, Pa.....	1916
TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.....	1907
TAYLOR, LIONEL E. Bankhead, Kelowna, B. C.....	1913
TAYLOR, Dr. WALTER P., 1428 Perry Place, N. W., Washington, D. C.	1916
TAYLOR, WARNER, 419 Sterling Court, Madison, Wis.....	1916
TERRILL, LEWIS McI., 44 Stanley Ave., St. Lambert, Quebec.....	1907
THOMAS, Miss EMILY HINDS, Bryn Mawr, Pa.....	1901
THOMPSON, J. WALCOTT, 602 Continental Nat'l Bk. Bldg., Salt Lake City, Utah.....	1916
THORNS, Miss JULIA A., Asheboro, N. C.....	1916
TINKER, ALMERIN D., 631 S. 12th St., Ann Arbor, Mich.....	1907
TOWER, Mrs. KATE DENIG, 9 Newbury St., Boston, Mass.....	1908
TOWNSHEND, HENRY HOTCHKISS, 69 Church St., New Haven, Conn..	1915
TREGANZA, A. O., 614 E. South St., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TRUMBELL, J. H., Plainville, Conn.....	1907
TUDBURY, WARREN C., Box 734, Washington, D. C.....	1903
TWEEDY, EDGAR, 27 Fairview Ave., Danbury, Conn.....	1902
TYLER, JOHN G., 149 Blackstone Ave., Fresno, Cal.....	1912
TYLER, Dr. WINSOR M., 522 Massachusetts Ave., Lexington, Mass..	1912
UNDERWOOD, WM. LYMAN, Mass. Inst. of Technology, Cambridge, Mass.....	1900
VALENTINE, Miss ANNA J., Bellefonte, Pa.....	1905
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....	1885
VAN NAME, WILLARD GIBBS, Am. Mus. Nat. History, New York, N. Y.....	1900
VETTER, Dr. CHARLES, 2 West 88th St., New York, N. Y.....	1898
VIERECK, HENRY L., Biological Survey, Washington, D. C.....	1916
VIETOR, Dr. EDWARD W., 166 St. James Place, Brooklyn, N. Y.....	1911

VIETOR, MRS. EDWARD W., 166 St. James Place, Brooklyn, N. Y.	1914
VISHER, DR. STEPHEN S., State Normal, Moorhead, Minn.	1904
WADSWORTH, CLARENCE S., 27 Washington St., Middletown, Conn.	1906
WALKER, GEO. R., R. D. 3, Murray, Utah.	1909
WALKER, DR. R. L., 355 Main Ave., Carnegie, Pa.	1888
WALLACE, CHAS. R., 69 Columbus Ave., Delaware, Ohio.	1913
WALLACE, JAMES S., 12 Wellington St., E., Toronto, Ontario.	1907
WALTER, DR. HERBERT E., 67 Oriole Ave., Providence, R. I.	1901
WALTERS, FRANK, 40 West Ave., Great Barrington, Mass.	1902
WARD, FRANK H., 18 Grove Place, Rochester, N. Y.	1908
WARD, HENRY L., 882 Hacket Ave., Milwaukee, Wis.	1906
WARD, MRS. MARTHA E., 25 Arlington St., Lynn, Mass.	1909
WARD, ROY A., Biological Survey, Washington, D. C.	1915
WARNER, EDWARD P., Concord, Mass.	1910
WATSON, MRS. ALEX M., 124 Hatton St., Portsmouth, Va.	1910
WEBER, J. A., Palisades Park, N. J.	1907
WEBSTER, DR. GEORGE A., 419 Boylston St., Boston, Mass.	1916
WEISEMAN, T. WALTER, 226 Beaver Road, Emsworth, Pa.	1916
WEISER, CHARLES S., 105 Springettsbury Ave., York, Pa.	1916
WELLMAN, GORDON B., 54 Beltran St., Malden, Mass.	1908
WETMORE, MRS. EDMUND, 125 E. 57th St., New York, N. Y.	1902
WEYGANDT, DR. CORNELIUS, 6635 Wissahickon Ave., Philadelphia, Pa.	1907
WHALER, MRS. J. W., 14 Murry Place, Princeton, N. J.	1916
WHARTON, WILLIAM P., Groton, Mass.	1907
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Ontario.	1903
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.	1902
WHITTLE, CHARLES L., 20 Langdon St., Cambridge, Mass.	1916
WIEGMANN, DR. WILLIAM HENRY, 436 East 5th St., New York, N. Y.	1916
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.	1895
WILCOX, T. FERDINAND, 118 E. 54th St., New York, N. Y.	1895
WILLARD, BERTEL G., 1619 Massachusetts Ave., Cambridge, Mass.	1906
WILLARD, FRANK C., Farmingdale, N. Y.	1909
WILLCOX, Prof. M. A., 63 Oakwood Road, Newtonville, Mass.	1913
WILLIAMS, MISS BELLE, Colonia Hotel, Columbia, S. C.	1915
WILLIAMS, ROBERT S., New York Botanical Gardens, New York, N. Y.	1888
WILLIAMS, ROBERT W., Tallahassee, Fla.	1900
WILLIAMSON, E. B., Bluffton, Ind.	1900
WILLIS, Miss CLARA L., 91 Wyman St., Waban, Mass.	1915
WILLISTON, MRS. SAMUEL, 577 Belmont St., Belmont, Mass.	1911
WILMÓT, NELSON E., 24 New St., West Haven, Conn.	1916
WING, DEWITT C., 5344 Dorchester Ave., Chicago, Ill.	1913
WINSLOW, ARTHUR M., Jackson, Mich.	1912
WISE, Miss HELEN D., 1514 13th St., N. W., Washington, D. C.	1916

WITTER, Mrs. HENRY M., 12 Montague St., Worcester, Mass.....	1916
WOOD, GEORGE B., 129 S. 18th St., Philadelphia, Pa.....	1916
WOOD, NELSON R., Smithsonian Institution, Washington, D. C.....	1895
WOODRUFF, FRANK M., Acad. of Sciences, Lincoln Park, Chicago, Ill..	1894
WOODRUFF, LEWIS B., 14 E. 68th St., New York, N. Y.....	1886
WORCESTER, Mrs. ALFRED J., 314 Bacon St., Waltham, Mass.....	1908
WRIGHT, ALBERT H., Upland Road, Ithaca, N. Y.....	1906
WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.	1907
WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....	1902
WYMAN, LUTHER E., 3927 Wisconsin St., Los Angeles, Cal.....	1907
YOUNG, JOHN P., 1510 5th Ave., Youngstown, Ohio.....	1911
ZIMMER, J. T., Dept. of Agriculture, Port Moresby, British Papua...	1908

DECEASED MEMBERS.

FELLOWS.

Date of Death

ALDRICH, CHARLES.....	March 8, 1908
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BEAL, FOSTER ELLENBOROUGH LASCELLES.....	Oct. 1, 1916
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
COOK, WELLS WOODBRIDGE.....	March 30, 1916
COUES, ELLIOTT*.....	Dec. 25, 1899
ELLIOT, DANIEL GIRAUD*.....	Dec. 22, 1915
GOSS, NATHANIEL STICKNEY.....	March 10, 1891
HOLDER, JOSEPH BASSETT.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
McILWRAITH, THOMAS.....	Jan. 31, 1903
MEARNS, EDGAR ALEXANDER.....	Nov. 1, 1916
MERRILL, JAMES CUSHING.....	Oct. 27, 1902
PURDIE, HENRY AUGUSTUS.....	March 29, 1911
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN MAYNARD.....	Jan. 28, 1887

RETIRED FELLOWS.

GILL, THEODORE NICHOLAS.....	Sept. 25, 1914
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HONORARY FELLOWS.

BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BARBOZA DU BOCAGE, JOSÉ VICENTE.....	July —, 1908
BERLEPSCH, HANS VON.....	Feb. 27, 1915
BURMEISTER, KARL HERMANN KONRAD.....	May 1, 1891
CABANIS, JEAN LOUIS.....	Feb. 20, 1906
DRESSER, HENRY EELES.....	Nov. 28, 1915
GÄTKE, HEINRICH.....	Jan. 1, 1897
GIGLIOLI, ENRICO HILLYER.....	Dec. 16, 1909
GUNDLACH, JOHANNES CHRISTOPHER.....	March 17, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, [KARL JOHANN] GUSTAV.....	Nov. 20, 1900

* Presidents of A. O. U.

HARVIE-BROWN, JOHN A.....	July 26, 1916
HUME, ALLAN OCTAVIAN.....	July 31, 1912
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MEYER, ADOLF BERNHARD.....	Feb. 5, 1911
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SAUNDERS, HOWARD.....	Oct. 20, 1907
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SCLATER, PHILIP LUTLEY.....	June 27, 1913
SEEBOHM, HENRY.....	Nov. 26, 1895
SHARPE, RICHARD BOWDLER.....	Dec. 25, 1909
TACZANOWSKI, LADISLAS [CASIMIROVICH].....	Jan. 17, 1890
WALLACE, ALFRED RUSSEL.....	Nov. 7, 1913

CORRESPONDING FELLOWS.

ALTUM, [C. A. =] BERNARD.....	Feb. 1, 1900
ANDERSON, JOHN.....	Aug. 15, 1900
BALDAMUS, AUGUSTE KARL EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS WRIGHT.....	Oct. 15, 1891
BLASIUS, [PAUL HEINRICH] RUDOLPH.....	Sept. 21, 1907
BLASIUS, WILHELM AUGUST HEINRICH.....	May 31, 1912
BOGDANOW, MODEST NIKOLAEVICH.....	March 16, 1888
BROOKS, WILLIAM EDWIN.....	Jan. 18, 1899
BRYANT, WALTER [PIERC]E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
BUTLER, EDWARD ARTHUR.....	Apr. 16, 1916
COLLETT, ROBERT.....	Jan. 27, 1913
COOPER, JAMES GRAHAM.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
DUGÈS, ALFRED.....	Jan. 7, 1910
FATIO, VICTOR.....	March 19, 1906
HAAST, JULIUS VON.....	Aug. 16, 1887
HARGITT, EDWARD.....	March 19, 1895
HAYEK, GUSTAV EDLER VON.....	Jan. 9, 1911
HERMAN, OTTO.....	Dec. 27, 1914
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, EUGEN FERDINAND VON.....	May 31, 1889
KNUDSEN, VALDEMAR.....	Jan. 8, 1898

KRUKENBERG, CARL FRIEDRICH WILHELM.....	Feb. 18, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LILFORD, LORD (THOMAS LYTTLETON POWYS).....	June 17, 1896
MARSCHALL, AUGUST FRIEDRICH.....	Oct. 11, 1887
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MIDDENDORFF, ALEXANDER THEODOROVICH.....	Jan. 28, 1894
MOSJISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST.....	Aug. 27, 1897
OATES, EUGENE WILLIAM.....	Nov. 16, 1911
OUSTALET, [JEAN FRÉDÉRIC] ÉMILE.....	Oct. 23, 1905
PHILIPPI, RUDOLF AMANDUS.....	July 23, 1904
PRJEVALSKY, NICOLAS MICHAELOVICH.....	Nov. 1, 1888
PRENTISS, DANIEL WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND RICHARD VON.....	March 15, 1903
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAS ALEKSYEVICH.....	Feb. 8, 1885
SHELLEY, GEORGE ERNEST.....	Nov. 29, 1910
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, HENRY BAKER.....	March 8, 1906
WHARTON, HENRY THORNTON.....	Sept. —, 1895
WOODHOUSE, SAMUEL WASHINGTON.....	Oct. 23, 1904
HERMAN, OTTO.....	Dec. 27, 1914

MEMBERS.

BAGG, EGBERT.....	July 12, 1915
BROWN, HERBERT.....	May 12, 1913
CAMERON, EWEN SOMERLED.....	May 25, 1915
FANNIN, JOHN.....	June 20, 1904
HARDY, MANLY.....	Dec. 9, 1910
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
KNIGHT, ORA WILLIS.....	Nov. 11, 1913
PENNOCK, CHARLES JOHN (disappeared).....	May 15, 1913
RALPH, WILLIAM LEGRANGE.....	July 8, 1907
TORREY, BRADFORD.....	Oct. 7, 1912
WHITMAN, CHARLES OTIS.....	Dec. 6, 1910

ASSOCIATES.

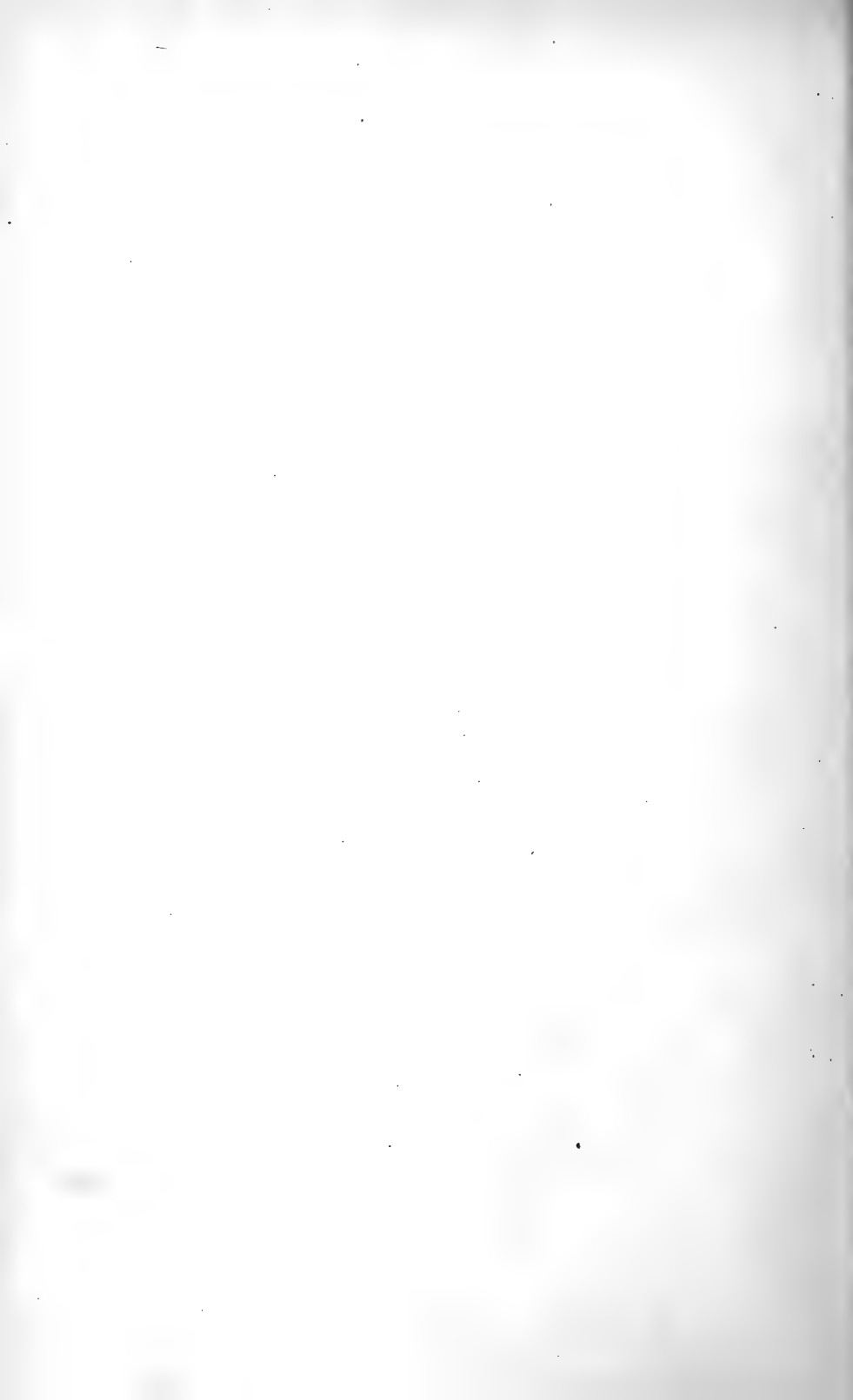
ADAMS, CHARLES FRANCIS.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK TALLANT.....	Feb. 6, 1907

ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, CHARLES E.....	—, 1905
BAIRD, LUCY HUNTER.....	June 19, 1913
BARLOW, CHESTER.....	Nov. 6, 1902
BAUR, GEORG [HERMANN CARL LUDWIG].....	June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BERIER, DELAGNEL.....	Feb. 11, 1916
BILL, CHARLES.....	April 14, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 28, 1901
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BODINE, DONALDSON.....	Aug. 26, 1915
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER HODGES.....	Jan. 5, 1900
BRANTLEY, WILLIAM FOREACRE.....	Sept. 9, 1914
BREESE, WILLIAM LAWRENCE.....	Dec. 7, 1888
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, LOUIS WESTEN.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BROWNSON, WILLIAM HENRY.....	Sept. 6, 1909
BURKE, WILLIAM BARDWELL.....	April 15, 1914
BURNETT, LEONARD ELMER.....	March 16, 1904
BUTLER, [THOMAS] JEFFERSON.....	Oct. 23, 1913
BUXBAUM, MRS. CLARA E.....	March 23, 1914
CAIRNS, JOHN SIMPSON.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, JOSEPH BUCKINGHAM.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARTER, EDWIN.....	Feb. 3, 1900
CARTER, ISABEL MONTIETH PADDOCK (MRS. EDGAR N. CARTER)	Sept. 15, 1907
CHADBOURNE, ETHEL RICHARDSON (MRS. ARTHUR PATTERSON CHADBOURNE).....	Oct. 4, 1908
CHARLES, FRED LEMAR.....	May 6, 1911
CLARK, JOHN NATHANIEL.....	Jan. 13, 1903
COE, WILLIAM WELLINGTON.....	April 26, 1885
COLBURN, WILLIAM WALLACE.....	Oct. 17, 1899
COLLETT, [COLLETTE] ALONZO MCGEE.....	Aug. 22, 1902
CONANT, MARTHA WILSON (MRS. THOMAS OAKES CONANT).....	Dec. 28, 1907
CONKLIN, CHARLES EDGAR.....	Sept. 8, 1916
CORNING, ERASTUS, JR.....	April 8, 1893
DAFFIN, WILLIAM H.....	April 21, 1902
DAKIN, JOHN ALLEN.....	Feb. 21, 1900

DAVIS, SUSAN LOUISE (Mrs. WALTER ROCKWOOD DAVIS) . . .	Feb. 13, 1913
DAVIS, WALTER ROCKWOOD	April 3, 1907
DEXTER, [SIMON] NEWTON	July 27, 1901
DODGE, JULIAN MONTGOMERY	Nov. 23, 1909
DYCHE, LEWIS LINDSAY	Jan. 20, 1915
ELLIOTT, SAMUEL LOWELL	Feb. 11, 1889
FAIRBANKS, FRANKLIN	April 24, 1895
FARWELL, Mrs. ELLEN SHELDON DRUMMOND	Aug. 6, 1912
FERRY, JOHN FARWELL	Feb. 11, 1910
FERRY, MARY BISSELL	March 18, 1915
FISHER, WILLIAM HUBBELL	Oct. 6, 1909
FOWLER, JOSHUA LOUNSBURY	July 11, 1899
FULLER, CHARLES ANTHONY	March 16, 1906
FULLER, TIMOTHY OTIS	Aug. 17, 1916
GESNER, ABRAHAM HERBERT	April 30, 1895
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HATCH, JESSE MAURICE	May 1, 1898
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HINE, Mrs. JANE LOMIS	Feb. 11, 1916
HODLEY, FREDERICK HODGES	Feb. 26, 1895
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HOOPES, JOSIAH	Jan. 16, 1904
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Vol. XXXIV

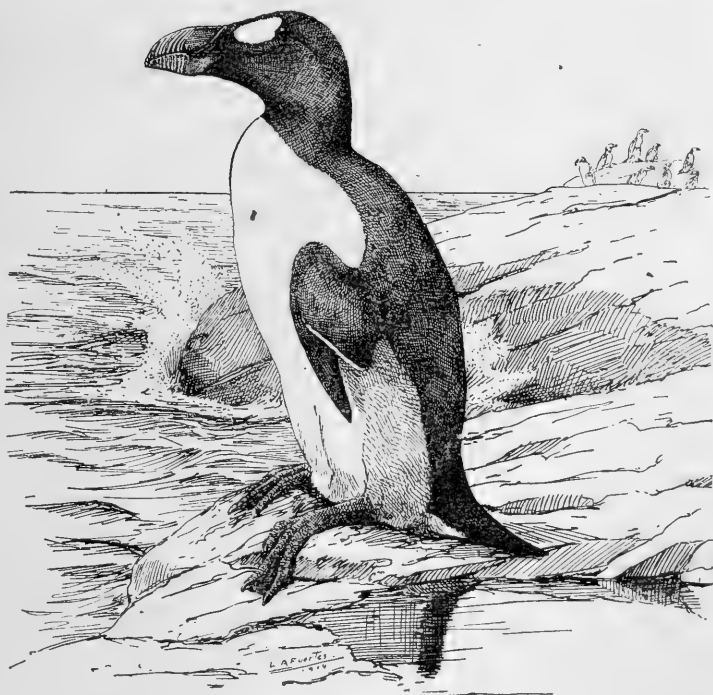
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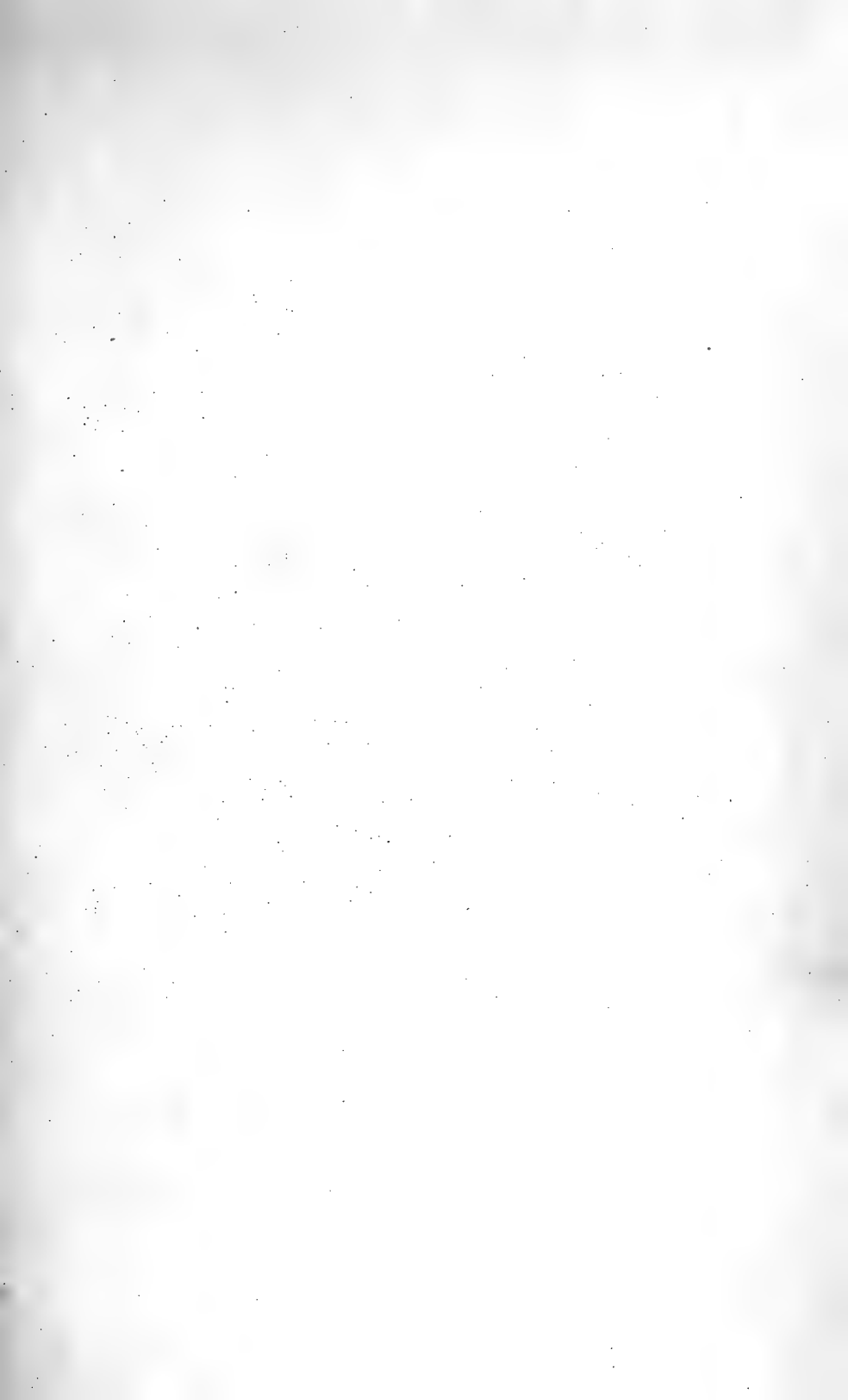
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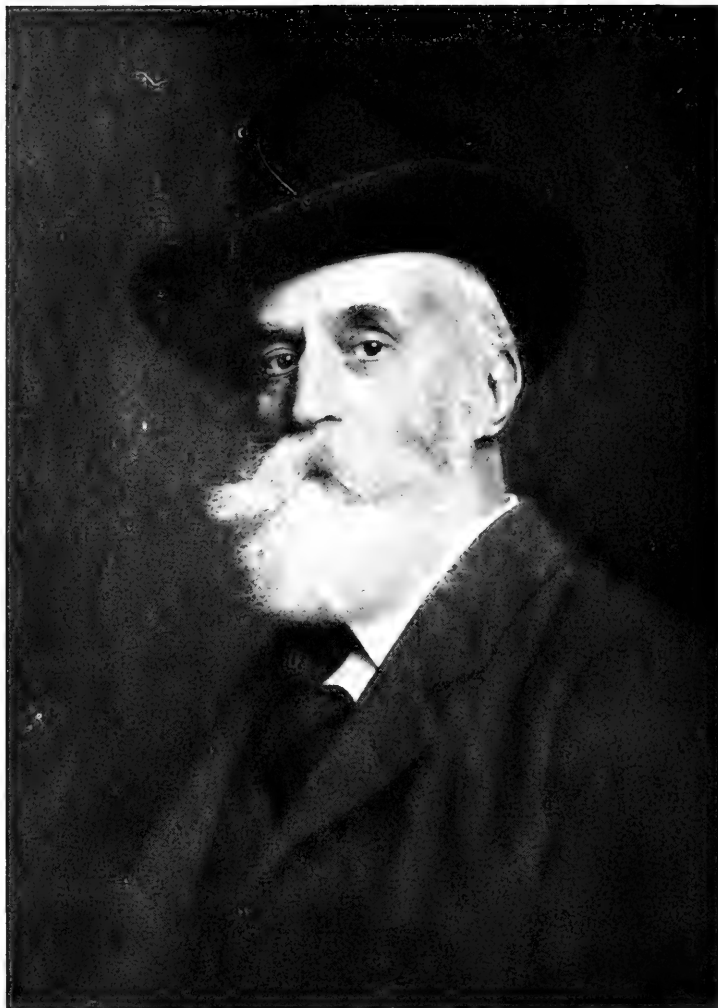
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*The Frank Jones
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DANIEL GIRAUD ELLIOT.

BY FRANK M. CHAPMAN.

Plate I.

DANIEL GIRAUD ELLIOT, A Founder of the American Ornithologists' Union, and its second President, died in New York City on December 22, 1915, in the eighty-first year of his age, from pneumonia after a short illness.

Dr. Elliot was born on March 7, 1835, in the city where he began and ended his career as a naturalist. He was the fourth son of George T. and Rebecca Giraud Elliot. His paternal ancestors were English and settled near New London, Connecticut, early in the 17th century. On his mother's side he was descended from French ancestors who settled at New Rochelle, New York, and moved to New York City some two centuries ago. He was married in 1858 to Ann Eliza Henderson, by whom he had two daughters, of whom but one, Margaret Henderson Elliot, is living.

Dr. Elliot prepared to enter Columbia College in 1852, but delicate health forced him to abandon a college course to seek climatic change. Thus was inaugurated a series of travels which either for the purposes of health, recreation, field exploration or museum research, led Dr. Elliot over a large part of the earth's surface.

The experience, specimens and data thereby acquired supplied the material on which his works were based, and we may begin our

record of Dr. Elliot's life by a summary of the opportunities for study which his travels and museum affiliations afforded him.

His first journeys were made to the southern United States and West Indies. In 1857 he went to Rio Janeiro and on his return crossed to Europe travelling from Malta to Sicily and thence to the Nile. From Cairo he crossed the desert to Palestine visiting Petra, Bethlehem, Jerusalem and Damascus, and crossed the Lebanon Mountains at an altitude of 10,000 feet. Thence he returned to Europe and America. During this journey the museums of London and Paris were visited, and relations established which prepared the way for Dr. Elliot's later studies at these institutions.

These occupied the greater part of the period between 1869 and 1883. It was during the first part of this time that as the representative of the recently organized American Museum, Dr. Elliot secured important collections of birds for that institution.

In 1883 on resuming his residence in New York City, Dr. Elliot made his headquarters at the Museum to which he had rendered such important service, and soon began to prepare systematic papers on certain groups of birds from specimens in its much enlarged collections, now under the care of Doctor Allen. Acting on behalf of the Museum, with Jenness Richardson, its taxidermist, he made a trip in 1888 to Montana in search of Bison. No living specimens were seen, but much valuable osteologic material was secured.

In 1894 Dr. Elliot accepted a call from the trustees of the recently organized Field Museum to become the Curator of its Department of Zoölogy, and he occupied this post until his resignation in 1906. Two years after going to Chicago Dr. Elliot organized and led a Field Museum expedition into Somaliland. He was attacked by a serious illness before the expedition was completed, but large collections had already been made which subsequently were added to the study and exhibition collections of the Field Museum. The African mammals which form so attractive a feature of the exhibition halls of the Field Museum were secured by this expedition and subsequently mounted by Carl E. Akeley, who accompanied Dr. Elliot to Africa. Recognizing Akeley's exceptional talents as an animal sculptor, Dr. Elliot had previously secured his services for the Field Museum.

The fact that Dr. Elliot was in his sixty-second year when he undertook this difficult African journey, and that he afterward made a collecting trip to the Olympic Mountains, is indicative of the energy and love of work which ever urged him from victory to fresh conquests.

His longest journeys, however, were made after he had resigned from the Field Museum and went in search of material on which to base his great monograph of the Primates. For this purpose he sailed for Europe in April, 1907, and remained abroad until 1909. After studying in all the principal museums of Europe he went to Egypt and to Ceylon, thence from Calcutta to Rangoon and passed through Burmah. Returning to Rangoon he went to the Straits Settlements and thence to Singapore. His route now led to Batavia in Java, and later to Hongkong, Canton and Shanghai. Then he journeyed 800 miles up the Yang-tse-Kiang to Hankow and from there he crossed to Peking and Tien-tsin, and back by sea to Shanghai. From China he went to Japan returning to New York through San Francisco.

Again taking up his quarters at the American Museum, which as a naturalist, in spite of his repeated absences, he always considered his real home, Dr. Elliot began to elaborate for his proposed monograph the enormous amount of data he had acquired in his travels.

The need for further study of the specimens in European collections arising, Dr. Elliot later revisited the museums of London, Paris, Leiden, Berlin, Dresden and Munich, before returning to New York to complete his monograph.

From this outline of Dr. Elliot's travels and researches in field and study, it will be observed that he had exceptional opportunities for the acquisition of the information embodied in the long list of publications which form so lasting and eloquent a record of his productive industry.

His first paper on birds, 'Descriptions of Six New Species of Birds,' was published in 'The Ibis' for October, 1859. Both the nature of the subject and the place of publication indicate that this paper was prepared during his first trip to Europe. It is evident moreover that this journey exerted a marked influence on the character of Dr. Elliot's ornithological studies which, following the European rather than American method, were monographic rather than regional in scope.

For the succeeding ten years, however, his studies were largely made and his works published in America. Aside from shorter papers, these include a 'Monograph of the Tetraonidæ' (New York, 1864-1865), an imperial folio with twenty-seven hand-colored plates; a 'Monograph of the Pittidæ' (New York, 1867), an imperial folio with thirty-one colored plates. The new and heretofore unfigured species of the 'Birds of North America' (New York, 1866-1869), in two imperial folio volumes with seventy-two colored plates, and 'A Monograph of the Phasianidæ' (New York, 1872) also in two folio volumes with forty-eight colored plates.

With few exceptions the illustrations for these works were made by Dr. Elliot himself, and no expense was spared in their reproduction or in the setting of the text, and these monographs were the most elaborate publications of the kind which had appeared in this country.

Although the Monograph of the Pheasants was published in this country, the studies on which it is based were doubtless largely made abroad, and its preparation therefore opens the period of Dr. Elliot's long residence in Europe beginning in 1869, and covering most of the period to 1883.

His work on the Pheasants was soon followed by 'A Monograph of the Paradiseidæ' (London, 1873), a folio with thirty-seven colored plates, and this in turn by a 'Monograph of the Bucerotidæ' (London, 1876-1882), a folio with fifty-nine colored plates; and 'A Monograph of the Felidæ' (London, 1883), a folio with forty-three colored plates.

Recognizing his own limitations as an artist, Dr. Elliot secured drawings by Wolf and Keulemans for these later works, which attained to the high ideal set by the trained taste and excellent judgment of their author.

During this period many shorter papers were published in 'The Ibis,' 'Proceedings of the Zoological Society' and elsewhere, and in 1879 'A Classification and Synopsis of the Trochilidæ,' a quarto memoir of 300 pages, appeared as a "Smithsonian Contribution to Knowledge."

After returning to New York, the years between 1883 and 1894 were occupied in preparing the parts relating to the Gallinæ, Columbidae and Trochilidae for the Standard Natural History, a wholly

new edition of the Pittidæ, reviews of several genera, and three handbooks on the Anatidæ, Limicolæ and Gallinæ of North America. As a sportsman Dr. Elliot had an extended field experience with the members of these families, much of which is contained in the biographical sections of these popular monographs.

The twelve years during which Dr. Elliot was connected with the Field Museum were the most fruitful of his life. His studies were now wholly devoted to mammals and despite the demands upon his time made by executive duties, and his expedition to Africa, he produced the following works of major importance: 'Synopsis of the Mammals of North America' (1 vol., 8vo, 1901); 'The Land and Sea Mammals of Middle America and the West Indies' (2 vols., 8vo, 1904); 'A Check-List of the Mammals of the North American Continent, the West Indies and Neighboring Seas' (1 vol., 8vo, 1905) and 'A Catalogue of the Collection of Mammals in the Field Columbian Museum' (1 vol., 8vo, 1907). These were all published by the Field Museum.

The extended journeys made after his resignation from the Field Museum (1906) were as we have already seen productive of the great Monograph of the Primates. This was Dr. Elliot's last published work, and at the time of his death he was engaged in preparing an appendix to his 'Synopsis of the Mammals of North America.'

It was not, however, only through his published works that Dr. Elliot served the branches of science to which in the most literal sense of the expression, his life was devoted.

Fortunately for the institutions concerned, his was the guiding hand in laying the foundation of the Zoölogical Departments of two of the great museums of this country — the American Museum and the Field Museum. With a practical knowledge of the requirements of a working museum, Dr. Elliot was also a man of affairs who could impress the trustees of the institutions concerned with the soundness of his views. His services in acquiring collections of birds and mammals for the American Museum were of exceptional importance since, at the time, he was one of the few men, perhaps the only man in America qualified to give the advice needed. Recognizing his fitness, the trustees of that institution commissioned him to purchase material during a journey which, in the winter of 1868-69, he was about to make to Europe.

He therefore acquired the Maximilian of Wied collection, containing many types of South American species, the A. L. Heermann collection from the southwestern United States, and a large representative collection of the birds of the world, including a Great Auk, was purchased from the Parisian dealers, Verreaux Frères.

Dr. Elliot's own collection of about 1000 North American birds including four specimens of the Labrador Duck, a bird which he himself saw in the flesh in New York markets, had already been secured by the Museum; and he later (1888) presented to it the fine collection of Hummingbirds on which his 'Monograph' of this family was based; at the same time the Museum also came into possession of Dr. Elliot's valuable ornithological library containing many rare works of reference, and complete files of such indispensable magazines, as 'The Ibis' and 'Proceedings of the Zoological Society.'

Both abroad and at home Dr. Elliot's services to science were recognized by the bestowal of many honors. He was the first American to be elected a Member of the British Ornithologists' Union; he was a Fellow of the Zoological Society and served for years on its Publication Committee; he was also a Fellow of the Royal Society of Edinburgh, a Founder and Vice-president of the Zoölogical Society of France and the recipient of decorations from several European powers.

As already stated, Dr. Elliot was a Founder of the American Ornithologists' Union, and its President in 1890 and 1891, while the Nuttall Ornithological Club, Linnæan Society and New York Zoölogical Society elected him to honorary membership. In 1906 Columbia University conferred upon him the degree of Doctor of Science; in 1914 the Linnæan Society of New York presented him with its medal, and in 1915 he was elected a member of the Board of Trustees of the American Museum.

To this record of the more significant events and achievements in Dr. Elliot's career as a naturalist, which might be compiled by any biographer having access to the needed sources of information, the memorialist feels it to be his special duty to add some account of the man himself. Dr. Elliot was the last link connecting us with what Dr. Coues termed the Cassinian Period of American Ornithology — or the years between 1853 and 1858. When he

began his studies of birds, Baird, Cassin, and Lawrence were the only working ornithologists in America. There were no bird-clubs, no A. O. U., no Museum of Natural History in the city in which he resided. There was, however, in New York at that time a taxidermist, John G. Bell, whom it will be remembered accompanied Audubon in 1843 on the Upper Missouri Expedition. Many of Dr. Elliot's specimens were preserved by Bell, to whom, indeed, was entrusted the task of mounting the Elliot collection after it had been acquired by the American Museum. It was the memorialist's privilege to know Bell during the latter years of his life. He was a man of marked personality and ardent enthusiasms, and it is more than probable that he was of assistance to young Elliot, not only in the preparation and identification of specimens, but that he also was influential in developing his inherent love for the study of birds.

In an address given before the Linnæan Society on March 24, 1914, acknowledging the receipt of the Society's Medal of Honor, Dr. Elliot himself presents us with an interesting sketch of the conditions under which he began his life-work:

"I do not suppose that my boyhood was different from that of any other lad who had been inoculated with the virus that was to strengthen and increase in power more and more with the passing years, until it should dominate and control his entire life. I began to make a collection of birds — why I began I have no idea, probably could not help it — and when it verged toward completion I did not know what to do with it, for there was no one of my age anywhere to be found who sympathized with me in my pursuit, or with whom I could rejoice upon the acquisition of some rare specimen; I was practically alone. My cousin Jacob Giraud, the author of the "Birds of Long Island," had just entered upon the close of his career, and wrote no more; Audubon, with decayed mental faculties had entered upon the last year of his life; DeKay had died in Albany, and in all the cities and within the boundaries of our great state there was but one working ornithologist, George Newbold Lawrence, a man greatly older than myself, whose sons were my friends and companions, but who had not inherited their father's scientific taste, and their interest in birds was simply that of shooting and eating them; a gastronomic fancy shared in by all the rest of the population. . . . In Massachusetts there were

no ornithologists. Neither Allen nor Brewster had appeared, and their predecessor, Brewer, had hardly been heard from. Philadelphia was much better off. It had its Academy, collections and library, donated mainly by Dr. Wilson, and for its Curator of Ornithology, John Cassin, one of the most erudite and competent ornithologists this country has ever produced, and the only one of his time familiar with exotic forms. Leidy was at the height of his career, engaged upon the works which have brought him such a celebrated name. I worked a good deal in the old building, corner of Broad and Sansom Streets, my companion often having been Cope, then starting upon his career, and we used to labor at the same table, he with his alcoholic snakes and lizards, and I with my birds; and as I was shy of having my material brought in contact with his, he usually occupied the greater part of the table.

"With Cassin I was brought into rather intimate communication, because when I began to publish my monographs the plates were colored at the establishment of Bowen and Company, who served Audubon for so many years, and of which firm Cassin was then the head, and we were in constant correspondence as well as personal communication for a number of years. In Washington, Baird had only lately come to the Smithsonian Institution, and with that great patience for which he was noted and the methods of diplomacy which carried him so far in after years, he was feeling his way in his position as Assistant Secretary, not having much of the sympathy of his chief, Henry, who did not hesitate to declare that he would have sent all the specimens of mammals and birds out of the Institution if he had his way. There was no other naturalist then in Washington. Gill had just begun his study of fishes, but Ridgway or Coues had not yet peeped. In all the length and breadth of the land there was not a periodical devoted to the ways of birds, and it was hard sledging for a budding ornithologist."

Fortunately Dr. Elliot was so situated that he could give himself both time and opportunity to develop this obviously inborn taste. With the exception of his Curatorship in the Field Museum, he never held a paid position as a naturalist, and his pursuit of his researches at a time when studies of this kind were far from being encouraged, is an indication of the strength of the interest which never lost its fascination for him,

His last task, the 'Monograph of the Primates,' was the greatest in size and most important in scientific value of any he had previously undertaken. While engaged in its preparation at the American Museum, he was one of the first of the scientific staff to reach his office, and with only a few minutes' pause for luncheon applied himself continuously to the monotonous labor of compiling synonymy and describing specimens. He seemed never to tire in either mind or body, but stuck persistently to whatever task he had in hand until it was completed. This ability to concentrate for many consecutive hours day after day, was one of Dr. Elliot's prominent characteristics, and goes far to account for the magnitude of his achievements. He was possessed of a phenomenal memory and could deliver *verbatim* an extended written paper without the aid of manuscript, or could recall with equal accuracy the exact language of an *impromptu* address. His eloquent tribute to Sclater and his associates delivered before the American Ornithologists' Union at its Congress in New York City, in 1913, was written, committed to memory and delivered without the aid of a note, and with the fluency and impressiveness which marked Dr. Elliot's public utterances.

Dr. Elliot was possessed of an exceptionally distinguished presence. Tall, and of fine figure, he carried himself with an easy erectness which never yielded to the weight of years. To strangers he appeared reserved, but this natural dignity of manner was merely the shield of a gentle, kindly, sympathetic nature, behind which one found a charming and congenial companion. His friendships, if slowly made, were enduring. Enemies, he had none, and even when his views differed radically from those held by others, I do not recall ever hearing him use a harsh or unjust word in criticism.

I was but an infant in ornithology when, in 1887, I first met Dr. Elliot at the American Museum; but our mutual interests soon bridged the gap separating us in knowledge as well as in years, and to my surprise I found that the courtly gentleman who at first had inspired in me no small degree of awe, was as fun-loving as a boy. Perhaps I may be permitted the relation of one personal incident, since it illustrates both Dr. Elliot's knowledge of a family of birds in which he was especially interested, as well as his consideration for the errors of his associates.

In July, 1889, falling a victim to one of the jokes which native collectors sometimes unconsciously play on unsuspecting and inexperienced ornithologists, I described as new a Hummingbird from the Bogotá region. In acknowledging receipt of a copy of the description, Dr. Elliot, then absent from the Museum, mildly expressed his doubts as to the validity of the proposed new form, and on re-examination of the type and only known specimen, I found that it was composed of the head of one species and the body of another, so skilfully joined that it required close examination to detect the fraud.

A second paper was therefore written stating the true status of the alleged 'new species.' Before this confession of error was published, Dr. Elliot returned to the museum, and with a hope that he might possibly fall into the trap I had so unwittingly entered, I said nothing of my latest discovery and merely handed him the type of the 'new species' for examination. This was twenty-seven years ago, but I can still clearly see Dr. Elliot, after only a momentary examination of the specimen, looking at me over his glasses and hear him saying, with as much sympathy in his voice as though he himself had been responsible for the error, "See here my boy, there's something wrong." To his trained eye the fraud was as obvious as though I had shown him a Bluebird's body with a Cardinal's head. Nothing remained for me to do, therefore, but produce the manuscript of my confession with which I had taken the precaution to arm myself.

Dr. Elliot was in his seventy-eighth year when his great monograph of the Primates was completed. At this age most men, even those who have retained an exceptional measure of health and vigor, consider their life-work as ended. Few of their early associates remain and the days devoid of either duty or pleasure drag wearily along. But those who were privileged to know Dr. Elliot in these last years of his life never thought of him as old. Time, it is true, had left its visible marks, but his mind was as young, his interests as keen as those of men who could count but half his years. If the friends of his youth had gone, community of interests brought him new ones. Occupation never was wanting, for there were always fresh fields inviting conquest, and to the end he retained that joy in his work which is the priceless heritage of the born naturalist.

THE ORANGE-CROWNED WARBLER AS A FALL AND WINTER VISITANT IN THE REGION OF BOSTON, MASSACHUSETTS.¹

BY HORACE W. WRIGHT.

My records of the Orange-crowned Warbler (*Vermivora celata celata*) in the Boston Region during a period of eight years ending with January, 1916, supplemented by the records of other observers, indicate that in recent years one or more individuals of the species are not unlikely to be found here by an observer who is much afield in the late autumn or early winter. To be sure, it is pretty much a matter of good fortune to find the individual bird or birds, since several fellow members of the Nuttall Ornithological Club inform me that they have not in a life's experience seen one in the wild. My own experience is, therefore, a fortunate one.

Mr. William Brewster in his 'Birds of the Cambridge Region,' published in 1906, gives nine records within the years 1885-1905, seven records of birds in his own garden and two others in Belmont. He has now kindly furnished me with two subsequent records for his garden, one in 1910 on November 20-21 and one in 1914 on September 23. Mr. Brewster's interesting experience and testimony first established the fact that the Orange-crown is more than an accidental visitant in the autumn in this region. My own records corroborate this idea and suggest, together with his, that while the species must still be regarded as a rare migrant, yet it may be looked for with a fair degree of expectation of finding it.

Mr. Brewster's eleven records lie within the period of the autumn from September 23 to November 28. There are three for September, namely, the 23d, and the 30th twice; none for October; and eight for November, namely, 7th, 9th, 10th, 17th, 20th-21st, 23d-24th, 25th, and 28th. On two occasions two birds were present, November 9 and 28. My own records run later. The earliest is November 5, and the latest is January 23. They are November 5, 18, 20, 22, 28, 29, December 3, 7, 9, 20, January 10,

¹ Read before the Nuttall Ornithological Club, April 17, 1916.

19, 23. Thus the species may be regarded not only as a late fall migrant, but even as a winter visitant. The records of other observers, as hereafter given, also indicate this.

In connection with my own records, it has been interesting to look up published records of the Orange-crowned Warbler for the whole section of New England and the Middle Atlantic States. The result of the investigation follows.

In Knight's 'Birds of Maine,' published in 1908, I find it only in the hypothetical list, with the inference that there is no well authenticated instance of its occurrence in the State. Mr. Knight regards the set of eggs in the Smithsonian Institution which were collected near Brunswick, Maine, and referred to this species, but the data of which seem to be lacking, as more likely to be that of the Nashville Warbler, and states that Audubon's record of the species breeding in Eastern Maine seems very likely a mistake, and that subsequent writers have so regarded his statement.

In Allen's 'Birds of New Hampshire,' published in 1903, one spring record is given, that of a single bird taken May 16, 1876, by Dr. W. H. Fox at Hollis. There is no autumn record.

Miss Alice W. Wilcox, director of the Fairbanks Museum of Natural Science at St. Johnsbury, Vermont, writes me, "We are quite outside the range of the Orange-crowned Warbler. No record that I know of has been made of it in Vermont. Our museum specimen is from Texas."

In Howe and Allen's 'Birds of Massachusetts,' published in 1901, four records are given: one shot at Springfield, May 15, 1863, by Dr. J. A. Allen, "who saw several other birds at the same time which he believed to be of this species"; one taken at Lynn, January 1, 1875 (by Dr. Brewer); a female taken by Mr. William Brewster on October 2, 1876, at Concord; and an adult male captured in the autumn of 1885 (September 30) in Belmont by Mr. H. W. Henshaw. The last record is included by Mr. Brewster in his list of occurrences in the Cambridge Region.

Rhode Island furnishes three published records. In Howe and Sturtevant's 'Birds of Rhode Island,' published in 1899, with supplement thereto in 1903, it is stated that one was shot by Mr. F. T. Jencks at Cranston, December 3, 1874, and a male bird was taken in East Providence on May 9, 1891. Of the former

occurrence Mr. H. A. Purdie, in a "Notice of a Few Birds of Rare or Accidental Occurrence in New England" (Bull. N. O. C. II., 1877, p. 21), says that it is the fifth specimen reported for New England and the second taken in the winter season. The bird taken by Dr. Brewer in Lynn, Mass., January 1, 1875, is, doubtless, the other winter occurrence referred to. The third record for the State has been furnished by Mr. Henry S. Hathaway (Auk, Vol. XXX, Oct., 1913, p. 556), namely, "A male of this very rare migrant was shot by the late James W. Stainton in Cranston on May 17, 1892. It is now in the collection of Rhode Island birds in the Park Museum of Providence."

In 'Birds of Connecticut' by Messrs. Sage, Bishop and Bliss, published in 1913, five records are given: a male shot in company with Nashville Warblers at East Hartford, May 8, 1888, by W. E. Treat; a female secured by L. H. Porter at Stamford, November 11, 1893; a male taken by L. B. Bishop on October 1, 1906, at New Haven; a young male taken by E. S. Woodruff at New Haven, October 8, 1906; and one seen by Dr. Bishop, October 6, 1911, at New Haven.

These New England records, dating from 1863, exclusive of Mr. Brewster's and my own, aggregate five in the spring in the years 1863, 1876, 1888, 1891, 1892 respectively; six in the fall in the years 1876, 1885, 1893, 1906 (two), 1911; and two in the winter, December 3, 1874, and January 1, 1875. Mr. Brewster adds ten records, all in the fall, one of his published nine records, that of the bird secured by Mr. Henshaw at Belmont in 1885 already having been enumerated. My records number thirteen, of which six were in the fall, all in November, and seven in the winter. The fall records are definitely those of six different individuals. The seven winter records not improbably include but five different individuals. Neither Mr. Brewster nor I have any spring record.

My thirteen records are of a single bird in each instance, namely: 1905, January 19 and 23, Abington, Plymouth Co.; 1908, November 5, Middlesex Fells, Stoneham; 1908, November 29, Cambridge, near Fresh Pond; 1910, December 3, Olmsted Park, Brookline, beside Leverett Pond; 1913, November 22, Belmont; 1914, November 18, Belmont; 1915, November 20, Olmsted Park,

Boston, beside Jamaica Pond; November 28, Fresh Pond reservation, Cambridge; December 7 and 9, Olmsted Park, Boston; December 20, Olmsted Park; 1916, January 10, Fresh Pond reservation, Cambridge, seen by Mrs. B. W. Parker and Miss Alice M. Paul on the 26th.

The 1905 bird was found in Island Grove Park in a grove of tall pines on a day when the ground was bare, feeding with a numerous band of Chickadees on the surface. Many views of it were obtained between its successive short flights from place to place, and a full description of its plumage was written down in my note book. I was puzzled at the time what name to put upon this warbler, for I had not as yet an acquaintance with the Orange-crown. Again, four days later, I visited the grove and readily found the warbler with the Chickadees, as before most of the time feeding on the ground, but sometimes in oak or pine saplings, and only when disturbed flying up into a taller tree, from which perch it would soon drop to the ground once more. Again a full description of the bird was written out in my note book. But it was not until I had had my subsequent experiences with the Orange-crowned Warbler that I could name this Abington bird with a sense of certainty as to its identification. Five days later I again visited the grove with Mr. Maurice C. Blake as a companion. Meanwhile a blizzard at a temperature of 11° , depositing a foot or more of snow, which lay upon the ground, had occurred. We could not find the warbler with the most careful and persistent searching. Its companions were present, the Chickadees, Red-breasted Nuthatches, and Brown Creepers, thirty of the first named, three of the nuthatches, and eight or ten of the creepers. Three Myrtle Warblers also were seen. We hoped the Orange-crown got safely away, but the chances seemed to point to its death by the storm. A temperature as low as 5° had already occurred on January 6, but there had been only light snows of not much depth up to the 25th. Abington is nineteen miles southward from the State House on Beacon Hill.

The first 1908 bird, seen on Bear Hill in the Middlesex Fells reservation, was also much upon the ground and at other times in low growth of bushes, the common barberry and privet. Its companions were Chickadees, Fox Sparrows, Juncos, and a Yellow

Palm Warbler. A spring of pure water was near at hand from which flowed a little stream. The second 1908 bird was seen in the rose garden of the late John C. Gray, Esq., whose estate is situated near Mount Auburn Cemetery, Cambridge. This bird frequently gave a sharp "chip" call.

The 1910 bird, a second winter bird, was seen on December 3, a clear, moderately cold day, with a temperature range from 24° to 32°. About noon I came upon the Orange-crown actively moving through shrubbery near Leverett Pond, sometimes resting on the topmost branches and thus affording very complete views of itself. This bird had as a companion the still more rare Blue-gray Gnatcatcher (Auk, Vol. XXVIII, Jan., 1911, p. 117). It was silent. The general coloring was brighter than that of the birds previously seen, which were much more dusky. It was regarded, therefore, as probably an adult male bird. Both birds were seen on the following day by Mr. Richard M. Marble, having moved only a short distance southward in the park, but having passed across the boundary line from Brookline to the Boston side.

The 1913 bird came to view in a small glen in that undeveloped part of Belmont Highland which lies next to Arlington Heights. I had been in search of Acadian Chickadees, nine of which I had successively seen (Auk, Vol. XXXI, April, 1914, p. 236). A Winter Wren had just presented itself after announcing its presence by its nervously rapid calls. The Orange-crown appeared close by in company with Golden-crowned Kinglets. A little run of water flows through the glen. The warbler was seen on barberry bushes growing among scattered cedars.

The 1914 bird was also seen in Belmont in a pasture with a scanty bush growth, occupying a rather limited group of bushes. An old apple orchard and some swampy land with birches were near, which were, doubtless, an additional attraction. My own experience, however, is that the Orange-crowned Warbler much more frequents shrubbery than trees.

The first bird of 1915 was seen close to the shore of Jamaica Pond on November 20, in the planting of shrubs which borders the footpath, appearing as I proceeded along the walk. The second bird of the season was seen at Fresh Pond on November 28. I had gone up to the reservation with my sister in the afternoon of a rare

late autumn day in which the temperature had risen to 57°, with the air calm. One of the first birds observed was an Orange-crown in the thick shrubbery, as we ascended a flight of steps from the shore of the Cambridge cove of the pond to the park land above, occupied in part by large hemlocks and white pines, with fringes of shrubs. Its companions were Chickadees. On one of the hemlocks was a White-winged Crossbill in the plumage of the female, the only one seen in the fall and winter of 1915. Before leaving the grove we had seen the warbler several times by returning to its chosen haunt. Just before sunset another interesting bird appeared in the form of a Great Blue Heron in the sky, flying over the pond southward. I searched for the warbler the following morning, but could not find it.

On December 7, I once more found an Orange-crown near Jamaica Pond in a somewhat extensive growth of young hemlocks near the memorial to Francis Parkman. It was in association with a late migrating Ruby-crowned Kinglet, two Golden-crowned Kinglets, and Chickadees. Mr. C. E. Clark of Medford had joined me, and we viewed the warbler together. It frequented the ground under the hemlocks much more than the branches of the trees. When undisturbed, it was generally feeding on the ground, and it sought the branches only when our approach became too close. Mr. H. L. Barrett recorded this bird on December 5, and Mrs. Lidian E. Bridge on December 8. The location of this Orange-crown was nearly identical with that of the bird of November 20, except that the hemlock growth stands somewhat farther back from the shore of the pond across the park drive. But that it was the same individual may be questioned, since I had looked for the warbler of November 20 on four successive walks through the park in the intervening time, namely, on November 23, 27, 29, and December 2, and had not been able to find it. On December 9, however, I again saw this later Orange-crown in the same location. On December 20 once more one was seen in the hemlocks. I had supposed that the last record for the season had already been obtained, for I had been through the park on December 13, 15, and 18, and Mr. F. H. Allen, as well as others, had looked carefully for the bird of December 5 to 9 on the 11th and 12th, and no one of us had been able to find it. It may not be unreasonable to infer,

therefore, that three individuals successively visited this locality in the season of 1915, as Mr. Brewster's garden records of 1891, namely, one on November 10, one on November 25, and two on November 28, seem to indicate a succession of migrants; also his records of 1900, namely, two on November 9 and one on November 23-24. If our supposition be correct, this bird of December 20 was the fourth for the season.

On January 10, 1916, again I found an Orange-crowned Warbler in close proximity to the Fresh Pond reservation. A damp snow was falling fast at the time the bird was seen, but later in the day the precipitation became rain. Directly upon leaving the electric car at the parkway, the warbler appeared in a low hedge of *Berberis thunbergii*, bordering the front yards of the houses standing in a row on the drive. It was presently clearly identified. The bird moved along in advance of me down through almost the entire length of the hedge row, 400 or more feet, passing on by short flights, while I successively advanced from stops made for repeated observations. The sharp "chip" call was given. It proved to be the only bird abroad on this occasion, for I passed on to the park, and in a half-hour's time no other bird gave evidence of its presence by flight or call. This warbler is scarcely likely to have been the warbler of November 28, since I had made visits to the reservation on December 1, 4, 10, 16, 23, 25, and January 5, and had seen no Orange-crowned Warbler. It may be regarded, therefore, as the fifth individual for the season. On January 26 this bird, presumably the same, was seen by Mrs. B. W. Parker and Miss Alice M. Paul on the west side of the reservation upon a bank covered with young white pines and shrubs. The warbler was observed on the ground, as is not uncommonly the case. Golden-crowned Kinglets had already been viewed by the ladies, when the warbler appeared. Their testimony seems conclusive that the Orange-crown seen by me on the 10th was still present in the reservation on the 26th. I am informed also that two other observers had seen this warbler a day or two previous to that date. Only one period of snow-covered ground had occurred up to that time. The last days of December and early days of January had furnished about six inches of snowfall, which gradually had been disappearing until before the end of the month the ground was entirely bare of

ice and snow, and conditions were still favorable for gleaning food even upon the surface.

There had been two minima temperatures of 8° and one of 4° in the month of January preceding the 26th, when the Orange-crown was last seen. In this connection the testimony of Mr. Arthur T. Wayne of South Carolina is interesting. Mr. Wayne in 'a general note' of 'The Auk,' (Vol. XXII, October, 1905, p. 417), states "The Orange-crowned Warbler is capable of enduring intense cold. I have seen numbers of these highly interesting birds near Charleston when the thermometer ranged as low as 8° above zero." Mr. Wayne further states "The Orange-crowned Warbler *winters abundantly* [the italics are his] on the coast of South Carolina, and it arrives from the northwest the last week in October and remains until the first week in April, or perhaps even later." In a letter recently received from Mr. Wayne he confirms these statements, saying that it winters regularly in the region of Charleston, but that more are seen in some winters than in others, that the species arrives there about October 30, the earliest record, and remains until the second week in April.

Other records than those already given which have been furnished me are:

One seen by Miss Blanche Kendall feeding on the suet in her yard in Brookline on January 4, 1901. Miss Kendall writes me, "The bird was here frequently through January and February," and states that there was difficulty at the time about its identification, but later it was determined with certainty to be an Orange-crown. Mr. Frederic H. Kennard saw the bird on February 11 and gives confirmation as to its identity.

One seen by Dr. C. W. Townsend and Dr. Glover M. Allen at the border of the Virginia Wood in the Middlesex Fells, Melrose, on November 29, 1906. This bird had been seen by Mrs. L. E. Bridge on the 26th.

One seen by Mrs. Bridge in West Medford on October 3, 1909.

One seen by Mr. Barron Brainerd and his father, Dr. Brainerd, in Olmsted Park, Brookline, on November 25, 1909, when the "sky was overcast and drizzling," following "a day with a north-east gale accompanied by sleet." The bird's call was noted as "stweep."

One seen by Mrs. Elizabeth M. Dunham in Auburndale, December 20, 1909, which, Mrs. Dunham states, "came into an apple tree close by a window where I was feeding some Chickadees, and remained some minutes."

One seen by Mr. H. L. Barrett in the Arborway, Jamaica Plain, not far from Jamaica Pond, Boston, November 19, 1911.

One seen by Mr. Barrett in Jamaica Plain on December 16, 1912.

One seen by Mr. Barrett beside Scarboro Pond in Franklin Park, Boston, with Mr. Ralph M. Harrington on November 15, 1914.

One seen by Miss E. D. Boardman at West Manchester on the North Shore, October 29, 1915, "near my bird bath."

These records make a contribution of nine more to the number for this vicinity, two in October, four in November, and three additional winter records, namely, December 16, 20, and January-February. Combining the records now presented in the several groups given, we find that, beginning with the year 1908, in the last eight years no year is without a record: 1908 and 1910 each have two records; 1911, 1912, 1913, each have one; 1909 and 1914 each have three; 1915 has six. In the years previous to 1908 there are two records in 1905, one each in 1904 and in 1901, three in 1900, three in 1891, and one in 1885, all these being the records of Mr. Brewster, except the 1901 Brookline bird and the 1905 Abington bird. So the appearance of the Orange-crowned Warbler in this vicinity, based upon records, may be said to have been more regular in the last eight years than in the twenty-three years preceding, although the increase of intelligent observers afield in the more recent years may in part account for the difference.

The oft-repeated presence of the Orange-crowned Warbler in the region of Boston in November, eighteen occurrences have been presented, together with its several recent recorded appearances in December and January, ten in number, whereas there are fewer September and October records, indicates that they are mostly the very late migrating birds which reach this section. As the species is a summer resident of the far northwest, Manitoba to Alaska, and its fall migration to the Atlantic Coast is southeasterly, passing, however, mostly west of the Alleghanies to the South Atlantic and Gulf States, the individuals which reach New Eng-

land have evidently proceeded on a more northerly route, in the course of which some at least seem to occupy more time in their migratory passage to the coast line.

And it would appear that the coast line is their ultimate goal, since I can learn of no late fall or winter records of the species in the interior of New England nor for the State of New York. Mr. Eaton in his 'Birds of New York' states "In the fall, migration takes place between the 25th of September and the 12th of October." And Mr. James H. Fleming in an article on the Birds of Toronto, Canada, testifies that it is a "regular migrant, rare, May 7 to 15 and probably later (May 27, 1888, Hamilton, Ontario); in the fall, October 6 to 10." And he further states "I have the records of only eight in eight years," (Auk, Vol. XXIV, Jan., 1907, p. 71).

It would appear, therefore, from such testimony as we have that the species leaves the interior before the middle of October and that the individuals which reach the seacoast at Boston and vicinity in November and later show a disposition to linger and even to winter here. This is the case of the Myrtle Warbler (*Dendroica coronata*) in its southward migration, the records of which show that as a wintering bird the species confines itself quite closely to the coast line after the period of its general migration. So hereabouts we do not obtain winter records of the Myrtle Warbler in territory lying much back from the immediate coast line, while the species is a regular winter resident in considerable numbers in towns along the shores of Massachusetts, showing hardiness in the very low temperatures which occasionally occur here, when the mercury falls to zero or below zero.

In this connection Mr. Wayne of South Carolina may again be quoted. In 'The Auk' for January, 1886, p. 138, Mr. Wayne states that he secured his first specimen of Orange-crowned Warbler on November 29, 1884, that the bird was shot on Sullivan's Island, which is "about six miles long and seven miles from Charleston, directly on the Atlantic Ocean." . . . "This warbler," he writes, "is a late autumnal migrant, . . . wintering in small numbers, especially on Sullivan's Island, as nearly all my specimens were taken on that island. They were all shot from myrtle bushes and invariably fell, when shot, into the water. I, therefore, consider this species strictly maritime when in South Carolina. . . . I have

failed to find the species five miles from Charleston away from the coast, but have taken it nine miles from Charleston on the coast. I have taken specimens in November, December, January, February, and March. The bird appears to migrate early in the Spring. . . . I have taken males in January with the crown bright orange. . . . I secured in all about fifteen specimens during the winter of 1884." Mr. Wayne found his birds "always keeping in the thickest bushes, searching for worms and larvæ amongst the dead leaves." Mr. Wayne again refers to the species as maritime in 'The Auk,' Vol. XXII, Oct., 1905, p. 417, where he states "The centre of abundance of these warblers [*V. celata*] is on the coast islands, as the greater part of these islands are veritable jungles, which the Orange-crowned Warbler delights to inhabit."

In view of Mr. Wayne's testimony for South Carolina and of the Boston Region records it is quite surprising, therefore, to find in 'The Auk' for January, 1916, Vol. XXXIII, p. 78, a 'general note' by Mr. J. T. Nichols and Mr. Ludlow Griscom of New York, which states "On January 3, 1915, we discovered an 'Orange-crowned Warbler in some live oaks on Monkey Island, Carritucket Sound [North Carolina]. The bird was collected and proved to be a female. It is now in the collection of the American Museum of Natural History, catalogue no. 123791. Mr. T. Gilbert Pearson informs us that this is the third record for the State." And Mr. C. J. Maynard in his 'Warblers of New England,' published in 1905, also states "The farthest north that I have found it [*V. celata*] in autumn was at New River, North Carolina, where a female, now in my collection, was obtained on November 11, 1900." Mr. Maynard in a letter just received confirms this statement, that this North Carolina specimen in his collection continues to be the most northern individual that he has seen along the Atlantic Coast.

To these very few records for North Carolina may be added two obtained just farther north in Virginia in the autumn: one, that of a fine adult bird taken by Dr. A. K. Fisher on October 13, 1889, while collecting in company with Mr. H. W. Henshaw, at Munson Hill, a locality a few miles from Washington, D. C. Dr. Fisher states "when first seen, it was in a thicket of small alders, blackberries, and thoroughworts, gleaning insects from

among the flowers of the latter plant" (Auk, Vol. VII, January, 1890, p. 96). And Mr. Ellison A. Smyth, Jr., in an article on 'Birds Observed in Montgomery County, Virginia,' furnishes a second record, that of a specimen obtained by him on October 2, at Blacksburg, a "town west of the Blue Ridge Mountains and near the summit of the Alleghany" (Auk, Vol. XXIX, Oct., 1912, p. 523). I find no other records published in the issues of 'The Auk' for these States.

But Dr. Witmer Stone in his 'Birds of Eastern Pennsylvania and New Jersey,' published in 1894, gives five records for that region, namely, one in February, 1860, on Rancocas Creek, N. J. (Turnbull); two in March: one about 1876 at West Philadelphia (McIlvaine) and one on March 22, 1883, at Haddonfield, N. J. (S. N. Rhoads); one on October 6, 1889, at Anglesea, N. J. (P. Laurent); and one on November 2, 1867, in Bucks Co., Pa. (C. D. Wood). These records are supplemented in Dr. Stone's 'Birds of New Jersey' in the Report of the New Jersey State Museum for 1908, p. 271, by two more records, namely, one at Hoboken, May, 1865, by C. S. Galbraith and one at Haddonfield on February 25, 1909, by R. T. Moore (Auk, Vol. XXVIII, Jan., 1910, p. 85). It is further recorded in the Report "John Krider states that he got one in New Jersey in December, when the ground was covered with snow." Here are furnished three distinct winter records for New Jersey and Eastern Pennsylvania, two in February and one in December, while the two March records suggest birds wintering rather than in their spring migration. Dr. Stone terms the Orange-crowned Warbler in New Jersey a "very rare transient visitant, February, March, and October, possibly winter resident in the southernmost counties."

To these records Mr. Richard C. Harlow adds a spring record, namely, "During the spring of 1909 it was my good fortune to be able to establish the occurrence of this bird [Orange-crowned Warbler] at State College, Center County, Pennsylvania. During a late flight of warblers on May 16 I observed several which I took to be Tennessee Warblers, but on collecting a pair of them they were found to be of this species. There were probably six or seven in the flock, and another taken was too mutilated for preservation. When seen the birds were in willows along a small stream in com-

pany with Nashvilles, Northern Parulas, and a few Redstarts. This date is remarkable because of the fact that the few Pennsylvania and New Jersey specimens have almost invariably been taken in late February or early March" (Auk, Vol. XXVIII, April, 1911, p. 268). This flock must have been a part of the general migration of Orange-crowns which takes place at the time named, but passes mostly west of the Alleghanies. The records gathered by Dr. Stone would seem to be those of the few birds which have kept more closely to the coast line.

Proceeding farther north in our survey to New York, where Mr. Eaton in his 'Birds of New York' states "In the fall, migration takes place between the 25th of September and the 12th of October," we find these October records: a female was taken, October 9, 1876, and a second specimen seen on the 29th of the same month by E. P. Bicknell at Riverdale (Bull. N. O. C., vol. IV, 1879, p. 61); a young female was shot near Syracuse, October 2, 1886, by Morris M. Green (Auk, vol. IV, Oct. 1887, p. 350). And Mr. William Dutcher, giving 'Notes on Some Rare Birds in the Collection of the Long Island Historical Society' states concerning *V. celata*, "This specimen was shot on the Eastside lands by Mr. [John] Akhurst [taxidermist, Brooklyn], and is the only one he ever procured. It is in immature plumage and was shown to, and identified by, Mr. George N. Lawrence" (Auk, Vol. X, July, 1893, p. 277). We find also in the same volume an account of a young male bird shot at Flatbush, Kings Co., on October 12, 1892, by Mr. Arthur H. Howell, who states that the Orange-crowned Warbler has never before been recorded from Long Island. Mr. Howell also states that "Dr. Edgar A. Mearns refers to it as a 'rare migrant' in the Hudson River valley" [p. 90].

So the very scattered records for the middle Atlantic Coast States are fewer than those of South Carolina to the South, where the species regularly winters, which would be expected, but are also fewer than those of the Boston Region on the north, which would not naturally be expected.

We have no records as yet, however, of the Orange-crowned Warbler remaining throughout the winter in the Boston Region except that of Miss Kendall in Brookline, where the warbler frequently visited the suet in her yard through January and

February, thus being assisted in procuring its needful supply of food. The species has not yet proven a capacity to cope with the severest conditions of weather which visit this region. The January 19 and 23 bird at Abington in 1905 and the January 10 and 26 bird at Fresh Pond, Cambridge, in 1916 seemed to be showing such a capacity, as they had already endured milder winter conditions, but they passed from our ken when the weather conditions became severer, as was the case after the last obtained record of each of these birds. I believe the consensus of opinion is that a migrating bird having remained in the north into the month of January is not likely to have the instinct of migration carry it to its more usual winter range, but will seek a living where it is, or, may be, wander simply in its search for food. So this 1916 bird may still be somewhere in the vicinity, if mishap have not overtaken it, which with regret we must say is quite too likely. The vicinity of Boston, however, appears to mark the northern limit of the appearance of the species in the east in the fall and winter, as the absence of Maine, New Hampshire, and Vermont records indicates.

Two instances of quite accidental occurrence of other warblers in this region in the winter may be cited as of interest in this connection. Dr. Walter Faxon gives me that of a Nashville Warbler (*Vermivora rubricapilla*) found by him dead in Swampscott, January 31, 1890. This bird was found "with its neck broken and wedged between two twigs of a barberry bush — clearly the work of a Shrike. Mr. Brewster, who now has the bird's skin, was sure that it could not have been dead over two weeks. In the stomach were many land snail shells" (Auk, Vol. VII, 1890, p. 409). And there was an occurrence of a Palm Warbler (*Dendroica palmarum palmarum*) remaining in the Arnold Arboretum at Jamaica Plain from November 26, 1911, to January 3, 1912, seen by myself and other observers (Auk, Vol. XXIX, April, 1912, p. 247). And 'Bird-Lore' gives the record of a Blue-winged Warbler (*Vermivora pinus*) found dead in the Bronx Park, New York, January 6, 1900, by Mrs. Elizabeth G. Britton, which "evidently starved to death." Mr. Chapman in a note on this occurrence states that the bird was presented to the American Museum; that it is apparently a female and its plumage is in fresh

and unworn condition; that the Blue-wing is not only one of the first of our summer residents to leave, it being rarely observed after September 5, but that it winters south of the United States; that on one occasion the mercury had registered 8°; and that probably the well-known habit of the species of searching for food in bunches of dead leaves and similar situations had enabled it to live where a flycatching warbler would long before have died" (vol. II, p. 26). As the winter range of these three species according to Chapman (*Warblers of North America*) is southern Texas to southern Mexico for *V. rubricapilla*, Florida southward to the West Indies for *D. palmarum*, and northern Mexico to Colombia for *V. pinus*, the occurrences would seem to have been purely accidental, while the fact that the usual winter range of the Orange-crowned Warbler reaches as far north as Charleston, South Carolina, where temperatures as low as 8° occur without being fatal to it, makes it appear quite possible and not improbable that the Orange-crown may have the hardiness to be a winter resident as far north as Boston, since records of winter visitants have now been obtained in five of the last eleven years, four of these years being 1909, 1910, 1912, and 1915, three individuals in 1915.

The Orange-crowned Warbler is much rarer in the spring migration in New England. As the general route of the species northward is through the Mississippi valley, the individuals which follow more closely the coast line, passing east of the Alleghanies, are few in number. The records of birds thus reaching New England, so far as they have been obtained, number but five, one each in the years 1863, 1876, 1888, 1891, 1892, on May 15, 16, 8, 9, 17 respectively. And I find but two Eastern New York and New Jersey occurrences for May, namely, a Highland Falls, N. Y., record in 1875 (*Bull. N. O. C.*, 1878, p. 46), and a Hoboken, N. J., record for 1865 (*Auk*, Vol. X, Jan., 1893, p. 90). Montreal has one record, that of a bird shot on May 21, 1890, by Mr. Ernest D. Wintle (*Auk*, Vol. VIII, July, 1890, p. 290). Therefore, the species is a very rare transient visitant in the spring in the whole northeastern section of the United States, so far as published records show. It is, however, a spring migrant in western New York, where, Mr. Eaton testifies, "it is a regular migrant, though in small numbers, in the spring, arriving from the 12th to the 17th

of May, and disappears from the 18th to the 21st." Thence westward it is less uncommon. "There are no breeding records for Canada in Ontario or eastward," Mr. Chapman states in 'Warblers of North America,' p. 87.

In its fall migration the Orange-crowned Warbler as a species seeking the coast line also shows a marked preference for the shores of ponds and vicinity of brooks, the records indicate, also for low shrubbery. It is readily distinguished from the Kinglets, both Golden-crowned and Ruby-crowned, by its having no wing-bars, and from the former by not showing its orange crown and having no definite head markings, by its yellowish underparts, dull in color, but distinctly yellow, and by its larger size. I have found the eye-ring and superciliary line to be very obscure, while the Ruby-crown's eye-ring is conspicuous. The call-note is also distinctive. It most nearly resembles the Nashville Warbler in plumage, but it is differentiated from that species by its dusky greenish yellow underparts which are obscurely streaked. And as the Nashville Warbler would be an extraordinary occurrence in late November, in December, and in January in New England, the very late migrating warblers which reach the Boston Region, other than Myrtle Warblers, may be expected to prove to be Orange-crowns, and not Nashvilles, and if they conform to color tests may fairly be so regarded without examination in the hand.

As to the crown of this species in life, Mr. Wayne in his letter recently received states "The orange patch is, of course, basal and is *always* concealed by the tips of the feathers. I can only tell an adult at large by the color of the underparts, as the crown spot is never discernible while the bird is at large — hence the specific name *celata*. In breeding plumage, that is, summer, the tips of the feathers are worn away by abrasion, and the crown is not at that season absolutely concealed. In winter and early spring the crown patch is only visible upon examination. I have yet to see the bird display its crown patch, even when chasing the female in March and April, and I am pretty sure I have seen over 500 specimens in South Carolina since 1886, not to mention the number I have encountered in various portions of Florida. The Orange-crowned Warbler *never* displays its crown patch while here in winter or early spring, like the Ruby and Golden-crowned Kinglets."

Of his specimens Mr. Wayne says "The orange patch is present in *both* sexes, but is more intense and pronounced in the males. I have some superb old males with the entire crown deep orange; the forehead is the only part which lacks this color." Mr. Brewster also states that he has never seen the concealed crown patch shown by a living bird, "although conspicuous enough," he writes, "in cabinet specimens of males taken in spring, when the plumage of the crown is but slightly disarranged. All such specimens have it in profusion; nor is it always wanting in spring females, although none of mine have more than a comparatively slight suffusion of it, and most lack it altogether. With males taken in autumn (September to November) and winter (December to February) it is almost or quite as profuse and richly colored as in spring ones, in what I take to be fully adult males, but much more dull and restricted in amount with those presumably immature, and with some of these nearly or quite absent altogether." Mr. Brewster regards this concealed color of the crown as "not orange at all" and says that to his eye "it has a more or less decided tinge of dull or pale chestnut." Mr. Brewster has very kindly undertaken for me a careful examination of a large series of skins which he possesses, which includes many specimens collected by Mr. Wayne near Charleston, S. C., in December, January, and February.

The records of the Orange-crowned Warbler for the fall and winter of 1915-1916, surpassing former seasons in their number, together with those of other recent years, strengthen the view that the species may be becoming a more regular and less rare fall migrant in this region and that it is manifesting a disposition to be a winter visitant, if not, indeed, a winter resident.

BIRDS OF THE CHILLIWACK DISTRICT, B. C.

BY MAJOR ALLAN BROOKS.

THIS list should have been published many years ago. In presenting it at this late date the writer is influenced largely by the discrepancies of ranges given in the A. O. U. Check-List of 1910.

The compilers of this list were evidently under the delusion that Chilliwack was in southeastern British Columbia instead of extreme southwestern, west of all the mountain ranges, with nothing but fifty miles of level country between its western boundary (Sumas Lake) and the sea.

The area covered by the present list includes the Chilliwack and Sumas valleys, a wide alluvial flat, originally mostly forest country, on the south bank of the Fraser River, a district about thirty miles by eight at its widest part.

The Fraser River here bursts through the wall of the Cascade Range, forming a precipitous cañon about one hundred miles in length, running nearly north and south. However improbable it may appear this cañon must represent the route to the valley of many of its summer residents, which must return towards the south through its gloomy length after passing up the east side of the Cascade Range on their northward migration.

Also included in the list are the birds of the Cascade summits to the east of the valley, including the valley of the Chilliwack (or Chilliweyuk) River and Chilliweyuk Lake, the former a mountain torrent rising in the latter and flowing through a deep cleft in the Cascades for the greater portion of its course.

The town of Chilliwack is some seventy feet above sea level, the Fraser River being influenced by high tides as far up as Sumas, some eight miles down stream.

The valley is extremely flat and at one time mostly heavy forest of Douglas fir, cedar, and hemlock with a sprinkling of large leaf maple and heavy underbrush. The banks of the rivers sustain a heavy growth of cottonwood, alder and willow. Much of the primeval forest has suffered by fire and only the blackened shells

of the gigantic cedars remain, and the land then supports a dense growth of large alder, willow and maple.

Sumas Prairie, mentioned so often by John Keast Lord, is a flat alluvial plain covered with natural grass and intersected by many winding sloughs, the whole being under water at the time of the rise of the Fraser River in June and July.

Sumas Lake is the western boundary of the district — a very shallow body of water without vegetation, and at the time of extreme low water in mid-winter almost without water.

The Cascade Mountains rise for the most part like a wall from the floor of the valley, the peaks being from 6000 to 8000 feet altitude. The flanks of the mountains were clothed originally in a continuous coniferous forest, but this has been for the most part swept by fire, resulting in a dreary tangle of dead trees both standing and fallen, with a dense second growth of the typical Pacific slope character — a region singularly destitute of bird and animal life.

The Coast Range ends on the north bank of the Fraser, only two small isolated mountains of 2000 and 3500 feet elevation rising to the south of that river.

The district lies well within the humid coast belt, the average yearly precipitation being about fifty inches. Winters are very irregular, occasionally there may be one without any severe frost, but in most winters there occur two or three periods of severe cold when the temperature drops to near zero, accompanied by a howling north wind which invariably lasts for three days or more without cessation. The coldest recorded temperature was in the winter of 1908-09, when the thermometer registered thirteen below zero. Snow does not usually lie for long in the valley. On the mountain summits it sometimes attains a depth of thirty feet, and persists in patches on the highest peaks throughout the summer.

About the end of June, and in some years early in the month, the Fraser, swollen with the snows of the far interior, overflows its banks and inundates a large portion of the valley, drowning out the nests of many of the ground-nesting birds. Of late years much dyking has been done, but to balance this most of the marshes have been drained so the region will never accommodate breeding waterfowl to any extent. The bulk of the land is now cleared and given over to intensive agriculture.

In May, 1887, I arrived in this region with my father, the late W. E. Brooks, who had bought a farm close to the village of Chilliwack. I was then eighteen years of age and chuck full of enthusiasm. All my spare time in the intervals of ranch work was devoted to ornithology, and aided by my father the valley was worked in a systematic manner. After four years, my father sold his ranch and returned to the east and the writer took up zoölogical collecting as a profession.

Most of his subsequent bird collections went to the museum of Mr. William Brewster and later a good deal of material was supplied to Mr. Outram Bangs and to Drs. Dwight and Bishop, while working out the fauna of British Columbia in this and other portions of the Province.

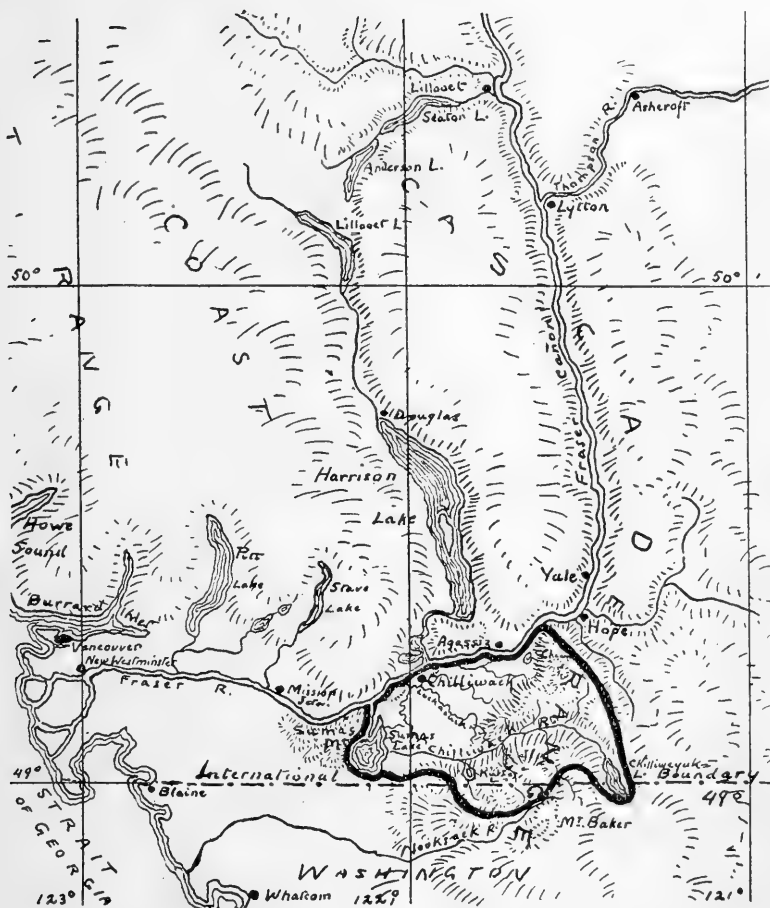
From 1894 when I returned to the west after a year or two in Ontario, most of my time was taken up in mammal collecting, some sixty species being recorded from the Chilliwack region, but a careful lookout was always kept for new birds. In all about eleven years were spent in this district resulting in the region being more thoroughly worked ornithologically than any other portion of the Province.

The sketch map which accompanies this list indicates the position of the locality. The region enclosed in the heavy black line embraces the entire area in which the observations here recorded were made. Species of which no specimens were taken or examined by the writer are preceded by an asterisk. It will be seen that there are only four in this category out of a total of 257.

In conclusion I must acknowledge my deep indebtedness to Messrs. Brewster, Ridgway, and Oberholser, and to Drs. Dwight and Bishop for their painstaking care in comparing and indentifying closely allied subspecies for me.

LIST OF THE BIRDS OF CHILLIWACK, B. C.

1. *Æchmophorus occidentalis*. WESTERN GREBE.—Common migrant.
2. *Colymbus holboëlli*. HOLBØLL'S GREBE.—Fairly common migrant and may breed in the Harrison Lake district to the north.
3. *Colymbus auritus*. HORNED GREBE.—Common migrant.



4. **Colymbus nigricollis californicus**. EARED GREBE.— Only once taken.

5. **Podilymbus podiceps**. PIED-BILLED GREBE.— Rather scarce resident. A few remained throughout the severe winter of 1908-'09, though in one case a bird must have survived underneath the ice of a frozen slough for about three weeks. There was probably plenty of air space where the water had fallen after the ice had formed.

6. **Gavia immer**. LOON.— Fairly common and breeds.

7. **Gavia pacifica**. PACIFIC LOON.— Straggler, only one taken.

8. **Gavia stellata**. RED-THROATED LOON.— A bird in full summer plumage in the shop of Mr. Wm. Hall in 1887, which was killed in the vicinity.

9. **Stercorarius longicaudus**. LONG-TAILED JAEGER.— I shot a fine white-breasted adult August 23, 1890, at Sumas Lake, and at other times saw several others, nearly always in September. This Jaeger certainly migrates overland as I have seen it doing so on several occasions — once in the Rocky Mountains. I have not yet seen it on the coast where the Parasitic Jaeger is common. The contents of the stomach of a young bird killed in September consisted mainly of half digested *Empetrum* berries indicating a very recent sojourn on the tundras.

10. **Larus glaucescens**. GLAUCOUS-WINGED GULL.— The commonest gull, ascending the smallest streams at the time of the salmon run and perching freely on tall dead trees.

11. **Larus argentatus**. HERRING GULL.— Much scarcer than the last. All the records so far published of *Larus occidentalis* for British Columbia refer to this gull. I had almost come to the conclusion that *occidentalis* had no right to a place on the British Columbian list when I came across the skin of a moulting adult in the Geological Survey's Collection at Ottawa, collected by Spreadborough on the south end of Vancouver Island.

12. **Larus californicus**. CALIFORNIA GULL. Scarce migrant.

13. **Larus delawarensis**. RING-BILLED GULL. Fairly common migrant.

14. **Larus brachyrhynchus**. SHORT-BILLED GULL. — At times abundant.

15. **Larus philadelphia**. BONAPARTE'S GULL.— Common migrant.

16. **Hydrochelidon nigra surinamensis**. BLACK TERN.— Two adults seen and one taken June, 1897, and one juvenal seen Sept. 1, 1899, all at Sumas Lake.

17. **Pelecanus erythrorhynchos**. WHITE PELICAN.— A straggler to Sumas Lake, usually seen in June or July at the time of the highest water.

18. **Merganser americanus**. AMERICAN MERGANSER.— Common resident.

19. **Merganser serrator**. RED-BREADED MERGANSER.— Scarce migrant in the late autumn and again in May.

20. **Lophodytes cucullatus**. HOODED MERGANSER.— Common resi-

dent. Both this species and the Goosander being tree nesting ducks do not suffer from the summer floods so disastrous to most of the ducks in the Fraser Valley.

21. *Anas platyrhynchos*. MALLARD.—An abundant resident.

22. *Chaulelasmus streperus*. GADWALL.—Scarce. I have seen the Gadwall at Sumas in June and July, but doubt if it breeds. A few remain all winter.

23. *Mareca americana*. BALDPATE.—Common resident and I think a few breed in the valley — or used to.

24. *Nettion carolinense*. GREEN-WINGED TEAL.—Common resident — breeds.

25. *Querquedula discors*. BLUE-WINGED TEAL.—The Blue-wing used to be a fairly common summer resident — very common in 1887 — but by far the greater portion of the nests were destroyed each year by the rise of the Fraser River in June. The last I saw was an adult male in June, 1896.

26. *Querquedula cyanoptera*. CINNAMON TEAL.—The Cinnamon Teal used to be common in the eighties, in fact, after the Mallard, the commonest breeding duck. Now very scarce on account of their nests being annually drowned out by the Fraser River floods. If the birds reared second broods they fell easy victims to duck shooters as the young, as a rule, could not fly when the season opened.

27. *Spatula clypeata*. SHOVELLER.—The Shoveller used to be a common breeder, now only a migrant owing to the draining of the upland swamps and the inundating of the lowlands. Two remained throughout the winter of '89-'90.

28. *Dafila acuta*. PINTAIL.—Common, resident, and used to breed.

29. *Aix sponsa*. WOOD DUCK.—The Wood Duck was rather scarce when I first came to British Columbia in 1887, becoming more common every year up to about '95 when it was very abundant. It has since decreased but is still a regular breeder in the Fraser Valley. Three remained throughout the winter of '89-'90, and I saw one in February, 1900, during exceptionally severe weather.

30. *Marila americana*. REDHEAD.—Scarce migrant. Four records.

31. *Marila vallisineria*. CANVAS-BACK.—Irregular migrant, sometimes common.

32. *Marila marila*. SCAUP.—Rather scarce winter visitant.

33. *Marila affinis*. LESSER SCAUP.—More common than the last.

34. *Marila collaris*. RING-NECKED DUCK.—Fairly common. One breeding record.

35. *Clangula clangula americana*. GOLDEN-EYE.—Common and possibly a pair or two may sometimes breed in the valley.

36. *Clangula islandica*. BARROW'S GOLDEN-EYE.—I only shot one undoubted Barrow's Golden-eye, but the species must be fairly frequent as it is a common breeder on the other side of the Cascades. At the time of my residence in this district I relied on the pattern of wing and color of

bill to distinguish the females and young males of the two Golden-eyes and undoubtedly passed over many Barrow's, as these characters are useless in determining the species.

37. **Charitonetta albeola.** BUFFLE-HEAD.—Common. One breeding record at Sumas Lake where I saw a female and three half grown young.

38. **Harelda hyemalis.** OLD-SQUAW.—I shot two females at Sumas Lake, November, 1894.

39. **Histrionicus histrionicus.** HARLEQUIN.—A number of pairs breed in the mountain streams tributary to the Chilliwack River. Never seen in fall or winter.

40. **Oidemia deglandi.** WHITE-WINGED SCOTER.—

41. **Oidemia perspicillata.** SURF SCOTER.—Huge flocks of Scoters pass through in May and early June, nearly all White-winged Scoters.

42. **Erismatura jamaicensis.** RUDDY DUCK.—Scarce migrant.

43. **Chen hyperboreus hyperboreus.** SNOW GOOSE.—Rather rare migrant.

44. **Anser albifrons gambeli.** WHITE-FRONTED GOOSE.—Usually scarce, but numerous in the fall of 1904, and possibly a few remained all winter. Latest spring record June 3.

45. **Branta canadensis canadensis.** CANADA GOOSE.—Common; remains throughout the coldest winters and a few can be seen on Sumas prairie all summer, but do not breed. I think it breeds at Chilliweyuk Lake at the head of the Chilliweyuk (or Chilliwack) River.

In the winter and early spring are seen flocks of a dark form of this species. At first I took these for *occidentalis* but the size and measurements of those shot were fully up to the maximum of *canadensis*. Several times I have had flocks of the light and dark "Honkers" feeding just out of gunshot of me and keeping apart from each other. The underparts of the dark form are often as dark as the upper surface and abruptly defined against the white of the ventral region. This is probably the breeding bird of the coast strip to the northward.

46. **Branta canadensis hutchinsi.** HUTCHINS' GOOSE.—Common and at times very abundant but getting scarcer, though few are killed. The vast flocks that used to remain on Sumas Lake and prairie every fall and spring mostly pass over now, as they are too much disturbed. A few remain with the "Honkers" all winter and one or two can usually be found throughout the summer, but of course do not breed.

Of the large numbers of Geese I have shot or handled I have never seen one that could in any way be called an intergrade between *canadensis* and *hutchinsi*, nor have I, once that I was well acquainted with the *minima*, seen an intergrade between that bird and *hutchinsi*, and I am convinced that when these three birds are carefully studied they will each be found entitled to full specific rank.

47. **Branta canadensis minima.** CACKLING GOOSE.—For long I mistook small dark birds of the preceding species for Cackling Geese but when I did get the real bird I found it easy to distinguish in the flesh.

It is not common in the valley and I have only taken it in the fall. I have also shot it east of the Cascades. Mr. Brewster wrote me when I sent him typical *minima* that they were the first undoubted examples of that bird he had received, and that he believed the majority of skins in other collections labeled *minima* were only *hutchinsi*.

48. **Olor columbianus.** WHISTLING SWAN.—At times large numbers visit Sumas Lake usually in the late fall. I found they decoyed very readily to an imitation of their call.

49. **Olor buccinator.** TRUMPETER SWAN.—Much scarcer than the last and I have only shot one in this district.

50. **Olor sp?**—In the spring of 1890 I examined a mounted swan in the shop of Mr. Wm. Hall that had been killed the preceding winter on Sumas Lake. It was an adult, a very small bird with the basal third of the bill yellow. I took it for the Whistling Swan. The other swans I had handled up to this time were considerably larger and had no yellow at the base of the bill. There was one of these in Mr. Hall's shop at the same time. Later I found that these black-billed Swans were only Whistlers as I did not shoot the true Trumpeter until the spring of 1895.

On November 5, 1894, large numbers of Whistling Swans were on Sumas Lake — about a dozen large flocks. Near them but always keeping separate were three swans of a very much smaller size, an adult and two young.

The cygnets were very dark, the necks especially so. On the mud flat at a little distance one only saw the white bird. I spent the entire day trying to get a shot at these. Ultimately I got up to within about two hundred yards and after watching the birds through my glass for a little while I fired and missed them, the bullet ploughing up the mud under the adult. Next day the Whistlers were still on the lake but the small swans had gone. Several times I had the latter in view close to a flock of Whistlers and the difference in size was very noticeable, also there were no cygnets among the Whistlers anything like as dark as the small swans. There is no doubt that these small birds, as well as the bird in Hall's shop (which I was later unable to trace), belonged to one of the small Asiatic species.

Swans have been protected at all seasons in British Columbia for the last ten years or so, so it is doubtful if a specimen of this interesting straggler will ever be taken in the Province.

51. **Plegadis guarana.** WHITE-FACED GLOSSY IBIS.—One specimen, a young bird, was shot some time in the summer of 1902 on the Luck-a-cuck River. This bird is now in the museum at Victoria.

52. **Botaurus lentiginosus.** BITTERN.—Common summer resident. I have seen several in mid-winter about 50 miles down the Fraser River from Sumas.

53. **Ardea herodias fannini.** NORTHWESTERN HERON.—Common resident but did not breed in the valley in my time. Mr. Outram Bangs informs me that skins I sent to him were typical of this form.

54. **Grus canadensis.** LITTLE BROWN CRANE.—Spring and fall migrant.

55. **Grus mexicana.** SANDHILL CRANE.—The large Crane bred regularly in a cranberry bog at Sumas up to 1902. It still breeds near the city of New Westminster in the large cranberry bogs.

56. **Rallus virginianus.** VIRGINIA RAIL.—Permanent resident. Scarce.

57. **Porzana carolina.** SORA.—Summer resident only. More common than the last.

58. **Fulica americana.** COOT.—Spring and fall migrant.

59. **Lobipes lobatus.** NORTHERN PHALAROPE.—Common fall migrant, never seen in the spring.

60. ***Steganopus tricolor.** WILSON'S PHALAROPE.—On September 9, 1888, a large Phalarope which I took to be this species flew low over my head and settled in a swampy stream where it swam about in regular phalarope fashion.

61. **Gallinago delicata.** WILSON'S SNIPE.—Common resident—a few breed.

62. **Macrorhamphus scolopaceus.** LONG-BILLED DOWITCHER.—Common in fall. Very rare in spring.

63. **Micropalama himantopus.** STILT SANDPIPER.—Two birds of the year taken at Sumas Lake August 19, 1899.

64. **Tringa canutus.** KNOT.—Only once seen when I shot a young bird at Sumas Lake in August, 1890.

65. **Pisobia maculata.** PECTORAL SANDPIPER.—Common in fall and rare in spring.


66. **Pisobia bairdi.** BAIRD'S SANDPIPER.—Common, often in very large flocks, in fall. Rare in spring. I have never taken an adult in the fall to my knowledge.

67. **Pisobia minutilla.** LEAST SANDPIPER.—Common in fall and one of the few sandpipers that visit the valley regularly in spring.

68. **Pelidna alpina sakhalina.** RED-BACKED SANDPIPER.—The last sandpiper to arrive in the fall and remains all winter on Sumas Lake, though driven to the sea coast in very severe weather.

69. **Ereunetes pusillus.** SEMIPALMATED SANDPIPER.—Although I have sent numbers of this Sandpiper back to the large eastern collections, and yearly recorded it as a regular migrant, it is still quoted (A. O. U. Check-List, 1910) as "casual" in British Columbia. It is a tolerably common and regular fall migrant to the valley, arriving late in July, some two weeks before the next species. East of the Cascades it is the common *Ereunetes* outnumbering *mauri* one hundred to one.

70. **Ereunetes mauri.** WESTERN SANDPIPER.—Common in fall and rare in spring. In life this is a very different bird from *pusillus*; in that species the bill is straight or turns slightly upward like a Knot's or a Sanderling's. In *mauri* the bill turns slightly but pronouncedly downwards, like a miniature of the Red-backed Sandpiper. In fact in life the Western Sandpiper bears a stronger resemblance to the Least Sandpiper than to its close ally the Semipalmated.

71. **Calidris leucophæa.** SANDERLING.—Scarce fall migrant.
72. **Totanus melanoleucus.** GREATER YELLOW-LEGS.—Common migrant. Arrives early in spring.
73. **Totanus flavipes.** LESSER YELLOW-LEGS.—Common in fall. I have no spring record.
74. **Helodromas solitarius solitarius.** SOLITARY SANDPIPER.—
75. **Helodromas solitarius cinnamomeus.** WESTERN SOLITARY SANDPIPER.—Both forms of the Solitary Sandpiper occur, though the latter is the more numerous. Both are regular and fairly common in fall but rarely seen in spring.
76. **Tryngites subruficollis.** BUFF-BREASTED SANDPIPER.—Scarce fall migrant. I have taken it about six times in August and September. I have never seen more than three together.
77. **Actitis macularia.** SPOTTED SANDPIPER.—Common. A few breed. A very late record for this latitude is December 3, 1895.
78. * **Numenius americanus.** LONG-BILLED CURLEW.—I have only seen this bird four times, always in April.
79. **Squatarola squatarola.** BLACK-BELLIED PLOVER.—Common in fall, only once seen in spring.
80. **Charadrius dominicus dominicus.** GOLDEN PLOVER.—Common in fall, but only two spring records.
81. **Oxyechus vociferus.** KILLDEER.—Common, a few remain all winter.
82. **Ægialitis semipalmata.** SEMPALMATED PLOVER.—I have taken this three times in the fall.
83. **Arenaria interpres morinella.** RUDDY TURNSTONE.—One record, Sumas Lake, August 19, 1899.
84. **Dendragapus obscurus fuliginosus.** SOOTY GROUSE.—Confined to the foothills and mountains.
85. **Bonasa umbellus togata.** CANADA RUFFED GROUSE.—
86. **Bonasa umbellus sabini.** OREGON RUFFED GROUSE.—Typical examples of both forms occur as well as every possible intergrade. I have never seen the Ruffed Grouse above 2000 feet on the coast. In the interior it ascends at least to 6000 feet.
87. **Lagopus leucurus leucurus.** WHITE-TAILED PTARMIGAN.—Found on nearly all the high peaks of the Cascades to the east.
88. **Columba fasciata.** BAND-TAILED PIGEON.—Common, arrives in April (once in March) and leaves early in October. I have seen it in flocks in September at timber line on the high peaks feeding on *Vaccinium* berries.
89. **Zenaidura macroura carolinensis.** MOURNING DOVE.—Rather scarce. Breeds.
90. **Cathartes aura septentrionalis.** TURKEY VULTURE.—Common summer resident.
91. **Circus hudsonius.** MARSH HAWK.—Common resident.
92.  **Accipiter velox.** SHARP-SHINNED HAWK.—Common. I have

found it breeding on the floor of the valley as well as in the mountains. Sometimes seen in midwinter.

93. **Accipiter cooperi.** COOPER'S HAWK.—Common and probably breeds.

94. **Astur atricapillus atricapillus.** GOSHAWK.—I find it very hard to distinguish adults of the two subspecies of Goshawk, but extremes of the young are very different, and I have killed several juveniles that were typical of this form — one, an extremely light colored female, the lightest Goshawk I ever saw in juvenile plumage.

95. **Astur atricapillus striatulus.** WESTERN GOSHAWK.—More common than the last, but I have never found Goshawks breeding in this district though they should do so. There was an invasion of Goshawks the winter of 1888-89, when they were very common — mostly adults.

96. **Buteo borealis calurus.** WESTERN RED-TAIL.—Tolerably common resident.

97. * **Buteo lineatus elegans.** RED-BELLIED HAWK.—I have only sight records for this species, two of these were at short range when the conspicuous markings of the under surface of the wings and tail were plainly seen and left no doubt in my mind as I am familiar with the eastern race.

98. **Buteo swainsoni.** SWAINSON'S HAWK.—Seldom seen in the valley but a common breeder in the park like country below timber line in the Cascades. I once observed a remarkable migration of Swainson's Hawk at Chilliwack in the spring of 1889. Hundreds of the birds were wheeling slowly about at various elevations and slowly drawing away to the northward. The flight lasted for about five hours. Nine-tenths of the birds were of the melanistic phase (as are all the breeding birds in the mountains). The hawks were accompanied by a few Herring Gulls in adult plumage.

99. **Archibuteo lagopus sancti-johannis.** ROUGH-LEGGED HAWK.—Irregular migrant, sometimes fairly common. A few usually remain all winter on Sumas Prairie.

100. **Aquila chrysaëtos.** GOLDEN EAGLE.—Winter visitant to the valley, breeding in the high mountains only.

101. **Haliaetus leucocephalus alascanus.** NORTHERN BALD EAGLE.—Tolerably common resident.

102. **Falco rusticolus rusticolus.** GRAY GYRFALCON.—One record only, an adult female shot by my father, February 14, 1890, on Sumas Prairie. This bird chased a Mallard that I had hit very hard. But before the Falcon made its final stoop the Mallard fell dead. The Falcon settled on the turf beside it but would not carry off its prize, or even touch it, though I kept hidden about a hundred yards away, and it eventually flew off and fell to my father's gun later in the day. This bird is now in the collection of Mr. William Brewster, who says of it "not quite typical (a trifle too dark), but much nearer to this form than to any other."

103. **Falco rusticolus gyrfalco.** GYRFALCON.—A regular winter visitant to Sumas prairie where I have taken several specimens. Two of

these in Mr. Brewster's museum he identifies as typical *gyrfalco*. Gyr-falcons arrive in November, usually about the 8th. The latest date I have seen one was March 7. They prey entirely on ducks and the smaller geese. It was seldom that there was more than one on the prairie at a time, and the smaller falcons worried them continually. I once saw a Prairie Falcon badger a Gyr-falcon for about two hours following it from tree to tree and striking at it continually.

104. **Falco mexicanus.** PRAIRIE FALCON.—At one time a regular fall and winter visitant, though always scarce. Of late years very rare. Last one taken July 27, 1896, a young bird.

105. **Falco peregrinus anatum.** PEREGRINE FALCON.—Scarce migrant. I have seen, but not taken, two or three very dark birds that may have been *pealei*. Young birds of those taken though dark had the light edging to the feathers of the upper surface typical of *anatum*.

106. **Falco columbarius columbarius.** PIGEON HAWK.—

107. **Falco columbarius suckleyi.** BLACK MERLIN.—

108. **Falco columbarius richardsoni.** RICHARDSON'S MERLIN.—Of the three Merlins *suckleyi* was the commonest, then *columbarius*, with *richardsoni* rare, only two of the latter taken and one of these not quite typical. Out of about thirty birds taken I saw no intergrades between *columbarius* and *suckleyi*. Since then I have taken two intergrades east of the Cascades. The Black Merlin is the only subspecies seen in the summer before August, but I never found it breeding.

109. **Falco sparverius phalæna.** DESERT SPARROW HAWK.—Permanent resident. Common.

110. **Pandion haliaëtus carolinensis.** OSPREY.—Common, leaving for the south early in the fall just when the streams are commencing to swarm with salmon.

111. **Asio wilsonianus.** LONG-EARED OWL.—Permanent resident. Scarce.

112. **Asio flammeus.** SHORT-EARED OWL.—Common resident, occasionally a few pairs remain to breed. A full grown young bird taken in July was very dark and rufous.

113. **Strix occidentalis caurina.** NORTHERN SPOTTED OWL.—Very rare. I purchased a very poor mounted specimen from Mr. Wm. Hall who got it at Mount Lehman, some fifteen miles down the Fraser River from Sumas, where a pair had reared a brood of young. During the eleven years I resided at Chilliwack and Sumas I worked very hard for this bird, visiting all likely localities and offering rewards for any owls brought me with dark brown eyes, but could get no trace of it. Returning for a brief visit in the winter of 1909, I was delighted to secure a fine specimen close to my old home. I had gone out on January 28 to try a little 22 pocket pistol on the jays and squirrels which were a pest, and after shooting a number of these I got first a Goshawk, and a little later this beautiful owl.

114. **Scotiaptex nebulosa nebulosa.** GREAT GRAY OWL.—Very rare. The last record I have was of one killed in January, 1890, at Sumas. Prior to that it was of fairly regular occurrence in the winter.

115. **Cryptoglaux funerea richardsoni**. RICHARDSON'S OWL.— One record only, a male taken by myself January 13, 1903.

116. **Cryptoglaux acadica scotæa**. NORTHWESTERN SAW-WHET OWL.— Resident, rather scarce. I list this as *scotæa* with some misgivings, as some of the specimens taken seemed to me to be quite light enough for the eastern bird. I have never heard the "saw-whetting" cry in the west from this owl, or any other note than a monotonous single whistle or hoot, kept up in constant repetition, now fast, now slow, for sometimes a quarter of an hour at a stretch. This is easily imitated by whistling the syllable "too" with the tip of one's tongue against the roof of the mouth. I have called the bird up in this way often — once one even settled on my head in the dusk.

117. **Otus asio kennicotti**. KENNICOTT'S SCREECH OWL.— Tolerably common resident.

118. **Bubo virginianus pallescens?** WESTERN HORNED OWL.—

119. **Bubo virginianus saturatus**. DUSKY HORNED OWL.— The *Bubos* of this valley present a great variety, from pale white footed birds almost pale enough for the Arctic subspecies, through rufous colored birds that looked like typical eastern birds when laid side by side, to the darkest *saturatus*. I have one of the light-colored birds still and it is lighter than any I have since taken in eastern B. C. *Saturatus* is the only breeding form.

120. **Nyctea nyctea**. SNOWY OWL.— Scarce though fairly regular visitant to the valley. Common in November and December, 1896. These are the only months I have seen it in here.

121. **Surnia ulula caparoch**. HAWK OWL.— Rare in the valley, earliest fall record October 16. I have reason to believe that it breeds in the mountains in the Hudsonian Zone.

122. **Speotyto cunicularia hypogæa**. BURROWING OWL.— Scarce straggler to Sumas prairie, two fall records and one in spring.

123. **Glaucidium gnoma californicum**. CALIFORNIA PIGMY OWL.— Common resident breeding in the valley, as well as in the high mountains. This may be the subspecies recently described by Grinnell from Vancouver Island (*swarthi*). The rolling whistle of this owl is the greatest of all aids to the collector in the west. An imitation of this, or the single call note, brings every small bird right up to you, even from the tops of the gigantic firs. It also brings up any Pigmy Owl that may be in the vicinity, and I once had one of these come down and carry off an Olive-sided Fly-catcher that I had brought down from the treetops and shot.

124. **Coccyzus americanus occidentalis**. CALIFORNIA CUCKOO.— Tolerably common summer resident of late years. Formerly rare.

125. **Ceryle alcyon caurina**. NORTHWESTERN KINGFISHER.— Common resident.

126. **Dryobates villosus leucomelas**. NORTHERN HAIRY WOODPECKER.— I shot two stragglers of this woodpecker, one on March 7, 1895, but I cannot find the record of the other. One was quite typical

the other approached the next subspecies. Both are in the collection of Mr. Brewster.

127. **Dryobates villosus monticola.** ROCKY MOUNTAIN HAIRY WOODPECKER.— This is of regular occurrence in the valley and may breed there. It is the breeding Hairy Woodpecker of the adjacent mountains. Specimens sent to Mr. Brewster were identified as *hyloscopus*, but this was before *monticola* was described.

128. **Dryobates villosus harrisi.** HARRIS'S WOODPECKER — Common resident.

129. **Dryobates pubescens gairdneri.** GAIRDNER'S WOODPECKER.— Common resident.

130. **Picoides americanus fasciatus.** ALASKAN THREE-TOED WOODPECKER.— Resident in the Hudsonian Zone on all the mountains. Never seen in the valley.

131. **Sphyrapicus ruber notkensis.** NORTHERN RED-BREASTED SAPSUCKER.— Tolerably common summer resident.

132. **Phlœotomus pileatus abieticola.** NORTHERN PILEATED WOODPECKER.— Common resident.

133. **Asyndesmus lewisi.** LEWIS'S WOODPECKER.— Tolerably common summer resident.

134. **Colaptes auratus luteus.** NORTHERN FLICKER.— Only one record, a bird taken by myself at Sumas, April 8, 1903. Its rarity is notable as I found it a regular migrant on Vancouver Island.

135. **Colaptes cafer saturator.** NORTHWESTERN FLICKER.— Common resident.

136. **Chordeiles virginianus virginianus.** NIGHTHAWK.— Breeding birds sent to Mr. Ridgway and to Mr. Brewster are identified as this form by both. "They certainly are not *henryi* or *sennetti*" (Brewster in *epist.*) *Henryi* and *hesperis* are constantly quoted as the British Columbian subspecies, but all I send back to be identified from different localities are typical *virginianus*. The last so identified are breeding birds from the dry interior (Okanagan) which Mr. Oberholser labels as *virginianus*.

137. **Cypseloides niger borealis.** BLACK SWIFT.— Common summer resident always appearing in the valley in moist or rainy weather. It breeds in the mountains, but the only place I have seen that looked likely is Che-am peak at the extreme head of the valley. Here I have seen a few dashing about the cliffs in July. A note for June 16, 1901, from my notebook reads, "One of the females had a fully formed egg with the shell soft, measuring 1.03 in. \times .66 in., an almost perfect oval." It is a mistake to suppose the females can always be told from the males by the rounded tail and white edges to the feathers of belly. These are only the younger birds. Old females probably two years and over have the forked tail and black under surface of fully adult males.

138. **Chætura vauxi.** VAUX'S SWIFT.— Common summer resident.

139. **Archilochus alexandri.** BLACK-CHINNED HUMMINGBIRD.— Rare though regular summer resident.

140. *Selasphorus rufus*. RUFOUS HUMMINGBIRD.— Common summer resident.

141. *Tyrannus tyrannus*. KINGBIRD.— Common summer resident.

142. *Tyrannus verticalis*. ARKANSAS KINGBIRD.— Scarce summer resident.

143. *Sayornis sayus*. SAY'S PHOEBE.— Straggler only. Two records. October 1, 1887, and March 26, 1896.

144. *Nuttallornis borealis*. OLIVE-SIDED FLYCATCHER.— Summer resident, from the floor of the valley up to 6000 feet. Not common.

145. *Myiochanes richardsoni richardsoni*. WESTERN WOOD PEWEE.— Common summer resident.

146. *Empidonax difficilis difficilis*. WESTERN FLYCATCHER.— Common summer resident.

147. *Empidonax trailli trailli*. TRAILL'S FLYCATCHER.— Common summer resident.

148. *Empidonax hammondi*. HAMMOND'S FLYCATCHER.— Scarce, breeding in the mountains and foothills only. On Vancouver Island (Cowichan) this species breeds right down to sea level.

149. *Empidonax wrighti*. WRIGHT'S FLYCATCHER.— Only one undoubted *wrighti* taken, April, 1888.

150. *Otocoris alpestris arctica*. PALLID HORNED LARK.— Common spring and fall migrant through the valley, and the breeding *Otocoris* above timber line in the Cascades. The smaller subspecies I have never seen at high altitudes.

151. *Otocoris alpestris strigata*. STREAKED HORNED LARK.—

152. *Otocoris alpestris merrilli*. DUSKY HORNED LARK.— Both of these are migrants only — *merrilli* is undoubtedly on its way to the arid plateau of Chilcotin via Harrison Lake, where it is a common breeder, but as I can find no record of *strigata* further north it is probably only a straggler to the valley. Mr. Brewster identifies five birds from the valley as *strigata* and one as *merrilli*. I have several of the latter in my own collection from Chilliwack.

153. *Pica pica hudsonia*. MAGPIE.— Common. Arrives in August and leaves in April. None breed.

154. *Cyanocitta stelleri stelleri*. STELLER'S JAY.— Common resident. Rare in the high mountains.

155. *Cyanocitta stelleri annectens*. BLACK-HEADED JAY.— A straggler from the east side of the Cascades. One taken at Sumas, October, 1891, with a conspicuous white eyelid. Another seen later but not secured.

156. *Perisoreus obscurus griseus*. GRAY JAY.— Common up to timber line and down to 700 feet, never seen in the valley.

157. *Corvus corax principalis*. NORTHERN RAVEN. — Rather rare. Breeds from 500 ft. to the summit of the highest peaks.

158. *Corvus brachyrhynchos hesperis*. WESTERN CROW.— Common resident.

159. *Corvus caurinus*. NORTHWESTERN CROW.— Common resident.

While *caurinus* seems to breed only along the Fraser or a little way back from it, *hesperis* is generally distributed through the valley. Both may be found breeding on Sumas Prairie. The notes of the two are distinct, and *caurinus* has in addition a musical laughing cackle, something like a Magpie's.

160. ***Nucifraga columbiana***. CLARK'S NUTCRACKER.—Rare straggler, I have only three records for the valley, all in the fall. More common in the Hudsonian Zone of mountains but does not breed there (?)

161. ***Dolichonyx oryzivorus***. BOBOLINK.—I have taken both adults and young in July and August but do not think it breeds west of the Cascades.

162. ***Molothrus ater ater***. COWBIRD.—One record only, Sumas, May 26, 1897, a female with ovaries not at all enlarged. This is probably *Molothrus ater artemisiæ* (Grin.).

163. ***Xanthocephalus xanthocephalus***. YELLOW-HEADED BLACKBIRD.—Straggler, only two records, both adult males, May 14, 1891, and June, 1895.

164. ***Agelaius phoeniceus caurinus***. NORTHWESTERN REDWING.—Common resident, a few remain all winter.

165. ***Sturnella neglecta***. WESTERN MEADOWLARK.—Common resident.

166. ***Icterus bullocki***. BULLOCK'S ORIOLE.—One pair nested regularly in some large birch trees growing in the open near our ranch at Chilliwack—these were the only ones in the valley then. Since, they have increased with the opening up of the forest and on my last visit to the valley I saw their nests or heard of them at several different points.

167. ***Euphagus cyanocephalus***. BREWER'S BLACKBIRD.—Common, but only rarely seen all winter.

168. ***Hesperiphona vespertina montana***. WESTERN EVENING GROSBEAK.—Sporadically abundant, during most years absent or rare. No breeding record.

169. ***Pinicola enucleator montana***. ROCKY MOUNTAIN PINE GROSBEAK.—A scarce winter visitant to the valley. The form breeding in the Hudsonian Zone (above 6000 ft.) in the Cascades to the east Mr. Oberholser has identified as *montana* from a juvenile sent to him. It is possible the birds found in the valley may belong to some other subspecies; but I have no specimens of these left for identification. The Queen Charlotte Island bird is typical *flammula*.

170. ***Carpodacus purpureus californicus***. CALIFORNIA PURPLE FINCH.—Common resident of the valley. I have seen no species of *Carpodacus* in the mountains.

171. ***Loxia corvirostra minor***. CROSSBILL.—Usually rare in the valley, but enormously common in the spring and early summer of 1890, passing through with Evening Grosbeaks in large flocks. Breeds plentifully in the Hudsonian Zone.

172. ***Loxia leucoptera***. WHITE-WINGED CROSSBILL.—I shot three

out of a flock of 20 at Sumas, February 4, 1896. The only ones I ever saw in this district.

173. **Leucosticte tephrocotis tephrocotis.** GRAY-CROWNED ROSY FINCH.— In the winter of '96-'97 I collected one or two typical *tephrocotis* from flocks of the next subspecies on Sumas prairie, also a good many of *littoralis* with brown feathers in the checks showing an approach to the former.

174. **Leucosticte tephrocotis littoralis.** HEPBURN'S ROSY FINCH.— Abundant the winter of '96-'97. Usually rare. Breeds on Mt. Che-am and other high peaks.

175. **Acanthis linaria linaria.** REDPOLL.— Irregular winter visitant. Sometimes common. Usually present during alternate winters. Latest spring record, April 6, 1896.

176. **Acanthis linaria exilipes.** HOARY REDPOLL.— One specimen taken, typical as to the bill but flanks and lower coverts slightly streaked. I must protest against the usage of classing the Hoary Redpoll as a subspecies of *hornemanni*, it is clearly a subspecies of *linaria*, as every intergrade both as to shape of bill and tone and pattern of plumage between the two can be found in any large series, but no intergrades between *exilipes* and *hornemanni*; and though absolutely typical examples of the former are almost exact miniatures of the latter the majority of *exilipes* show a far closer approach to *linaria*.

177. **Spinus pinus.** PINE SISKIN.— Common resident.

178. **Plectrophenax nivalis nivalis.** SNOW BUNTING.— Scarce though fairly regular winter visitant to Sumas prairie.

179. **Calcarius lapponicus alascensis.** ALASKAN LONGSPUR.— Common in the fall, rare in spring, one or two remain all winter.

180. **Rhynchophanes mccowni.** MCCOWN'S LONGSPUR.— Two records. An adult male in full breeding plumage taken on a little ridge of natural prairie on our ranch at Chilliwack, June 1, 1887, and two females taken at the identical spot three years later almost to a day, after watching them circle about high in the air for about quarter of an hour. All three of course were stragglers only. I have never seen the species in the dry interior though I have always been on the lookout for it. It goes very much against the grain for me to put this in a different genus from the Lapland and Chestnut-collared Longspurs. All three are so perfectly congeneric in structure, notes, and habits.

181. **Poecetes gramineus affinis.** OREGON VESPER SPARROW.— Very scarce migrant only.

182. **Passerculus sandwichensis sandwichensis.** ALEUTIAN SAVANNAH SPARROW.— Tolerably common migrant.

183. **Passerculus sandwichensis alaudinus.** WESTERN SAVANNAH SPARROW.— Abundant migrant, common breeder, and an occasional bird seen all winter. Some splitter will undoubtedly some day separate the small breeding form of the marshes and low meadows from the larger bird that passes through in great numbers when the small bird is sitting on eggs,

or in some cases feeding young. The small form is allied to *bryanti* and like it, is a bird of the lowlands and estuaries of the coastal strip.¹

184. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW.— First taken May 21, 1889. Another bird seen in spring of 1896. In 1899 I saw a breeding pair in the valley. It has recently become common in northern Okanagan and is probably also increasing at Chilliwack.

185. **Zonotrichia querula.** HARRIS'S SPARROW.— Two taken January 8, 1895, in which year there was an invasion of this sparrow as far west as Vancouver Island. Another seen in April, 1895.

186. **Zonotrichia leucophrys gambeli.** INTERMEDIATE SPARROW.— Common migrant. No specimens of Nuttall's Sparrow taken though it is the common breeding bird of the coast and islands.

187. **Zonotrichia coronata.** GOLDEN-CROWNED SPARROW.— Tolerably common migrant.

188. **Spizella monticola ochracea.** WESTERN TREE SPARROW.— Scarce winter visitant.

189. **Spizella passerina arizonæ.** WESTERN CHIPPING SPARROW.— Common summer resident.

190. **Junco oreganus oreganus.** OREGON JUNCO.— Breeding from the floor of the valley to the Hudsonian Zone.

191. **Junco oreganus connectens.** SHUFELDT'S JUNCO.— Common winter visitant. I cannot say with certainty that this subspecies is displacing *oreganus* as it is in the Seattle-Tacoma region.

192. **Junco hyemalis hyemalis.** SLATE-COLORED JUNCO.— Casual winter visitant. Two taken at an interval of about seven years, one other, at least, observed.

193. **Melospiza melodia morphna.** RUSTY SONG SPARROW.— Abundant resident.

194. **Melospiza melodia rufina.** SOOTY SONG SPARROW.— Winter visitant only (?). Specimens taken were not as dark as those from north-western Vancouver Island, nor even as dark as some from the dry interior in Okanagan.

195. **Melospiza lincolni lincolni.** LINCOLN'S SPARROW.—

196. **Melospiza lincolni striata.** FORBUSH'S SPARROW.— Many birds sent back to eastern collectors labeled *striata* passed unchallenged, including those sent to Mr. Brewster, but the only skin I have left from the valley is *lincolni lincolni*. Lincoln's Sparrow in one form or another breeds just below the Hudsonian Zone, and the species is a common migrant through the valley.

197. **Passerella iliaca unalaschcensis.** SHUMAGIN FOX SPARROW.—

198. **Passerella iliaca insularis.** KADIAK FOX SPARROW.—

199. **Passerella iliaca townsendi.** TOWNSEND'S FOX SPARROW.— Dr. Bishop and Mr. Oberholser have identified these three races from migrating Fox Sparrows I have sent back from Chilliwack. Dr. Bishop

¹ [cf. Bishop, Condor, Sept. 1915, p. 187.— Ed.]

has also identified two females taken April 11, 1905, as "*fuliginosa* approaching *townsendi*" but it has seemed safer to list them as the latter, as I know I have never seen in this valley the typical *fuliginosa* that breeds on the islands in the Gulf of Georgia, which is an extremely saturated form with *no yellow on the under mandible*. All three forms listed above are migrants, though I have once seen *townsendi* wintering in the valley.

200. ***Passerella iliaca schistacea***. SLATE-COLORED FOX SPARROW.— This is a scarce breeder in the Hudsonian Zone of the Cascades. I have never seen it in the valley. Identified by Oberholser.

201. ***Pipilo maculatus oregonus***. OREGON TOWHEE.— Common resident.

202. ***Zamelodia melanocephala***. BLACK-HEADED GROSBEAK.— Common summer resident in the valley.

203. ***Passerina amoena***. LAZULI BUNTING.— Tolerably common summer resident.

204. ***Piranga ludoviciana***. WESTERN Tanager.— Common summer resident up to upper edge of Canadian Zone (about 5000 ft.).

205. ***Petrochelidon lunifrons lunifrons***. CLIFF SWALLOW.— Scarce up to about 1895, since then more common and a colony breeds on a barn near the town of Chilliwack.

206. ***Hirundo erythrogastra***. BARN SWALLOW.— Common summer resident.

207. ***Iridoprocne bicolor***. TREE SWALLOW.—

208. ***Tachycineta thalassina lepida***. VIOLET-GREEN SWALLOW.—

209. ***Stelgidopteryx serripennis***. ROUGH-WINGED SWALLOW.— All three of these Swallows are common and breed, though when I first arrived in the valley there were no Violet-green Swallows breeding there.

210. ***Riparia riparia***. BANK SWALLOW.— Tolerably common and a colony must breed within fifty miles though I never found it breeding west of the Cascades.

211. ***Bombycilla garrula***. BOHEMIAN WAXWING.— Common and fairly regular winter visitant, the first arrivals usually seen towards the end of October.

212. ***Bombycilla cedrorum***. CEDAR WAXWING.— Common summer resident. Cedar Waxwings might be expected to winter on the coast of British Columbia, but I never saw them at that season in the Chilliwack Valley. Once I saw a flock in November, a very late date for the species.

213. ***Lanius borealis***. NORTHERN SHRIKE.— Fairly common migrant, a few remaining all winter. British Columbian birds are of large size with very large bills, doubtless Grinnell's new subspecies *invictus*.

214. ***Lanius ludovicianus gambeli***. CALIFORNIA SHRIKE.— One record only, a single bird shot by my father in April, 1888, and identified by Mr. Brewster.

215. ***Vireosylva olivacea***. RED-EYED VIREO.— Common summer resident.

216. **Vireosylva gilva swainsoni**. WESTERN WARBLING VIREO.—Tolerably common summer resident.

217. **Laniivireo solitarius cassini**. CASSIN'S VIREO.—Fairly common summer resident.

218. **Vireo huttoni obscurus**. ANTHONY'S VIREO.—One record, May, 1905, the only one I ever took on the mainland.

219. **Vermivora celata celata**. ORANGE-CROWNED WARBLER.—Regular migrant and not uncommon in the fall when the gray-headed young birds are easily distinguished from those of the next subspecies. Specimens identified by Oberholser.

220. **Vermivora celata lutescens**. LUTESCENT WARBLER.—Common and it may breed in the valley or the adjacent foothills, but I never actually found undoubted evidence of the fact.

221. **Dendroica aestiva rubiginosa**. ALASKA YELLOW WARBLER.—Common summer resident in the valley.

222. **Dendroica coronata**. MYRTLE WARBLER.—Fairly common migrant.

223. **Dendroica auduboni auduboni**. AUDUBON'S WARBLER.—Common migrant and a few remain to breed on the foothills. It is possible also that this Warbler may remain all winter as I have seen it as late as January 10, but I think the bulk, if not all, leave after that date and do not return until after the spring moult is completed.

224. **Dendroica nigrescens**. BLACK-THROATED GRAY WARBLER.—Common summer resident.

225. **Dendroica townsendi**. TOWNSEND'S WARBLER.—Tolerably common migrant but I never found it breeding in the valley, which is strange considering that it is a common breeder at sea level on Vancouver Island.

226. **Oporornis tolmiei**. MACGILLIVRAY'S WARBLER.—Common summer resident.

227. **Geothlypis trichas arizela**. PACIFIC YELLOW-THROAT.—Common summer resident.

228. **Icteria virens longicauda**. LONG-TAILED CHAT.—One record, a straggler taken on Sumas prairie, May 26, 1897.

229. **Wilsonia pusilla pileolata**. PILEOLATED WARBLER.—

230. **Wilsonia pusilla chryseola**. GOLDEN PILEOLATED WARBLER.—Both of these forms occur; it is probable that the latter is the breeding race. I have specimens of the former in my collection and Mr. Brewster identified two sent to him as belonging to the latter race though not extreme examples.

231. **Setophaga ruticilla**. REDSTART.—One record, an adult male taken in June, 1889.

232. **Anthus rubescens**. PIPIT.—Abundant migrant and a fairly common breeder at and above timber line.

233. **Cinclus mexicanus unicolor**. DIPPER.—Common resident, breeding in all the mountain valleys that have rushing streams and de-

scending to the larger rivers in October when the Dog Salmon are running, their ova forming the main diet of the Dipper at that season and through the winter.

234. **Dumetella carolinensis**. CATBIRD.— Scarce summer resident, probably about six pairs of birds breeding in the valley.

235. **Salpinctes obsoletus obsoletus**. ROCK WREN.— One record. I looked for this wren regularly every summer in what I took to be suitable localities in the mountains, and ultimately took one hopping about like a sparrow on a gravel bar in a river. This was late in November in very cold weather. I have never seen the species so late in its natural habitat east of the Cascades.

236. **Thryomanes bewicki calophonus**. SEATTLE WREN.— Common resident. In the severe winter of 1908-09 when the thermometer dropped to thirteen below with a howling wind for a week, this hardy little wren seemed to suffer no inconvenience and while Purple Finches and Juncos were dying in numbers, it trilled its cheery song from any sheltered nook. It is never found east of the Cascades, and the "Southern British Columbia" in the last A. O. U. Check-List should be corrected to southwestern.

237. **Troglodytes ædon parkmani**. WESTERN HOUSE WREN.— Common summer resident.

238. **Nannus hiemalis pacificus**. WESTERN WINTER WREN.— Common summer resident from the floor of the valley to the Hudsonian Zone. Common throughout the winter in the valley.

239. **Telmatodytes palustris paludicola**. TULÉ WREN.— Breeding in suitable localities and a few probably remain all winter.

240. **Certhia familiaris occidentalis**. CALIFORNIA CREEPER.— Fairly common resident.

241. ***Sitta carolinensis aculeata**. SLENDER-BILLED NUTHATCH.— I include this on the authority of Macoun's Catalogue of Canadian birds. The record stands "One specimen taken on Sumas Prairie, B. C., October 10, 1894 (E. F. G. White)." Mr. White knows this bird well and the above constitutes the only record of the subspecies for Canada, as the form occurring east of the Cascades is now separated as *nelsoni*. It is quite likely the slender billed Nuthatch occasionally straggles over the border from northwestern Washington just as the Bush-Tit does. The nearest breeding record for this nuthatch is the neighborhood of Tacoma.

242. **Sitta canadensis**. RED-BREADED NUTHATCH.— Common resident from the floor of the valley to the Hudsonian Zone.

243. **Penthestes atricapillus occidentalis**. OREGON CHICKADEE.— Common resident.

244. **Penthestes rufescens rufescens**. CHESTNUT-BACKED CHICKADEE.— Common resident.

245. **Psaltriparus minimus minimus**. BUSH-TIT.— Two taken from a large flock in the brush along the eastern edge of Sumas prairie, Nov. 25, 1899, and a pair observed breeding at the same place March 23

following. I never saw the species before or since and this must have been only a sporadic northward movement. The Bush-Tit occurs as a resident some fifty miles nearer the coast at Boundary Bay.

246. **Regulus satrapa olivaceus.** WESTERN GOLDEN-CROWNED KINGLET.—Common breeder in Hudsonian Zone and common from September to May in the valley.

247. **Regulus calendula grinnelli.** SITKA KINGLET.—It is probable that both races of the Ruby-crown occur but I have neglected to get Chilliwack specimens identified, so only list the form that is most certain to be the resident subspecies.

248. **Myadestes townsendi.** TOWNSEND'S SOLITAIRE.—Fairly common migrant, nesting in the mountains and possibly to near the base of the foothills. A few winter.

249. **Hylochichla guttata guttata.** ALASKA HERMIT THRUSH.—One taken May 2, 1905.

250. **Hylocichla guttata nanus.** DWARF HERMIT THRUSH.—Scarce migrant.

251. **Hylocichla guttata sequoiensis.** SIERRA HERMIT THRUSH.—This is the breeding form of Hermit Thrush. I have not noticed it below the Hudsonian Zone. Identified by Oberholser.

252. **Hylocichla ustulata ustulata.** RUSSET-BACKED THRUSH.—Common summer resident from the floor of the valley up into the foothills. I have heard what I took to be this thrush well up into the Canadian Zone but have no specimens from there and the mountain bird is probably *swainsoni*.

253. **Planesticus migratorius migratorius.** ROBIN.—Specimens taken on both spring and fall migrations, the latter identified by Mr. Ridgway.

254. **Planesticus migratorius propinquus.** WESTERN ROBIN.—Abundant in summer and a few remain throughout most winters. Breeds up to the Hudsonian Zone.

255. **Ixoreus naevius naevius.** VARIED THRUSH.—Resident. A few breed in the cool hemlock and spruce forests on the floor of the valley and more commonly at higher elevations.

256. **Sialia mexicana occidentalis.** WESTERN BLUEBIRD.—Fairly common breeder in the valley. I have seen this bluebird as late as January 10, but doubt if any remain through the winter though they do so at salt water fifty miles westward.

257. **Sialia currucoides.** MOUNTAIN BLUEBIRD.—Common migrant.

HYPOTHETICAL LIST.

Pelecanus californicus. CALIFORNIA BROWN PELICAN.—A Pelican haunted the Fraser River at Sumas for some time in the fall of 1894, that was described to me as a "cross between a Pelican and a Sand-hill Crane." This suggests the young bird of this species.

Chen rossi. ROSS'S GOOSE.—A very small Snow Goose frequented Sumas prairie for about six weeks in the spring of 1896. It always associated with the same flock of Hutchin's Geese and kept clear of a small flock of Snow Geese that were always present on the prairie. It looked much smaller than the latter though I was never able to get them in close juxtaposition.

Branta canadensis occidentalis. WHITE-CHEEKED GOOSE.—Mr. Brewster identifies four geese, from a series I collected for him, as this subspecies. He says of them "Nos. 46179 and 47105 are typical, No. 46178 is fairly typical in every respect, No. 47104 is typical in respect to markings of head and neck but the underparts are as light colored as in extreme specimens of *canadensis*."

With all deference to so eminent an authority, I hesitate to include this subspecies in my regular list as I have since seen specimens of true *occidentalis* which seems to be larger, of a deeper brown coloration throughout, and with larger bills and feet.

Dryobates pubescens, subsp.?—I have twice seen at close quarters Downy Woodpeckers of pure black and white coloration quite different from *gairdneri*. From the quantity of white spotting on the wings I should take these for *nelsoni*.

Vermivora rubricapilla gutturalis. CALAVERAS WARBLER.—A singing male pursued for some time but not secured in April, 1889.

Penthestes hudsonicus hudsonicus. HUDSONIAN CHICKADEE.—Chickadees seen in the Hudsonian Zone which I took at the time for *rufescens* were probably of this species as I have found it a regular resident of the Cascades a little further east.

Astragalinus tristis salicamans? WILLOW GOLDFINCH.—Since I left the region I have had several reports of Goldfinches feeding on the thistles. I kept a very careful lookout for this bird during my residence there, and it certainly did not occur then, though I saw it further south in Washington state. The Chilliwack birds may be *pallidus* which is a common resident east of the Cascades in British Columbia.

THE BIRDS OF CULEBRA ISLAND, PORTO RICO.

BY ALEXANDER WETMORE.

THE Island of Culebra, second in size of our possessions in the Virgin group, lies twenty miles east of Cape San Juan on the north-eastern point of Porto Rico. Though known with Vieques as one of the *Islas de Pasaje*, there is little more than passing mention made of Culebra in the accounts of historians or in other literature pertaining to Porto Rico. Culebra must have been discovered at an early date, probably by Columbus in 1493 as in that year he reached St. Croix and then crossed to Porto Rico. In 1530 the historian Iñigo Abbad remarks that the few remaining aborigines left Porto Rico and settled on Mona, Vieques and other off-lying islands. Before that time Culebra was supposed to have been visited at times by the Arawakas from the south. As there was no fresh water supply on the island for many years, it remained almost uninhabited.

Since American occupation of Porto Rico, Culebra has been made a naval reserve as the inner bay, Ensenada Honda, harbors vessels of large size in safety. In 1899 the United States Fish Commission Steamer "Fish Hawk" was at Culebra Island from February 7 to 12 and a collection of birds was made by Mr. A. B. Baker and Dr. J. D. Milligan. In the report of the work done in Porto Rico by the scientists on the Fish Hawk (Evermann, 1902, p. 22-23) mention is made of Brown Pelicans and "coots, ducks, fish hawks and Kingfishers as well as various species of land-birds" seen about the small lagoon near the village on Culebra: this is to my knowledge the only attempt to enumerate the birds of Culebra Island in a published account. Mr. Cory (Auk, 1891, p. 37) lists a single specimen of *Cæreba portoricensis* from Culebra Island. Mr. Ridgway (Birds of North and Middle America) makes reference to specimens from Culebra in several instances, from birds collected by the Fish Commission expedition or from a few skins sent in to the United States National Museum by officers stationed at the naval encampment. It is possible that Mr. Riise of St. Thomas secured skins from Culebra in the fifties but I have seen no mention of them.

After making a collection of birds on Vieques Island, on April 4, 1912, I crossed to Culebra on the mail sloop "Pedrito." The port, Playa Sardine, was reached about ten o'clock at night and accommodations were secured that night in the village. The following day through a letter from my friend, Mr. Harold Stiles, to Don Pedro Marqués I was given a two-roomed house on the hill just above the village and after settling my belongings, field work was begun. On April 11 I visited Louis Peña or Southwest Cay and on the 15th crossed to Culebrita for a day. Work on Culebra was carried on until April 22 when I left on the return journey to Porto Rico.

PHYSICAL FEATURES.

Culebra Island is approximately 7 miles long and from 4 to 5 miles wide. It is roughly triangular in shape and has the southeastern coast indented by a large bay known as Ensenada Honda. The village Playa Sardine lies at the base of the promontory between this bay and a smaller one on the south side. The island is hilly, with elevations rising three or four hundred feet above the sea. Rolling brush-grown pastures extend inland and some of the hills are densely covered with forest. At Playa Sardine and at Playa Brava (on the north coast) are small lagoons and in the western part of the island is a larger one known as Flamenco. The coast is in the main rough with rocky projecting headlands and narrow sandy beaches in the bays.

The small island of Louis Peña (Southwest Cay) lies a mile southwest of Playa Sardine. It is less than a mile long and is rather narrow with a hill at either end and a mangrove swamp in the center. Holes dug in the sand and lined with boards in out of the way places on this island betrayed the work of smugglers whose activities of late years have been largely curtailed through the efforts of internal revenue agents. Culebrita Island east of Culebra is slightly larger than Louis Peña. A lighthouse (kept at the time of my visit by Señor Guillermo Morris) stands on a flat-topped hill 500 feet above the sea. Much of this island is low and there is one lagoon. Cayo Norte (North East Cay) was not visited. It is said to be partly cleared. Besides these three islands

there are several smaller keys and reefs near them that are the haunts of various sea birds. In crossing from Vieques I passed near Cay Lobo (Cross Key) and found it a forbidding cactus covered rock with no evidence of bird life apparent.

Culebra, though subject at times to torrential rains, is dry and arid. The annual rainfall for the island for 1908 was 47.33 inches, for 1909, 54.63 inches, and for 1910, 35.81 inches. No other records are available. The population depends upon rain for its water supply and a cement catch basin draining into a municipal cistern has been built around the top of a hill. The sun was strong at the time of my visit and its rays penetrating but as the air was dry no bodily depression resulted. The trade winds cooled and refreshed when one could remain in the shade.

GENERAL CONDITIONS.

The vegetation of Culebra was, so far as my observations extended, similar to that of Vieques Island. Extensive pasture-lands were cleared out by peons with their machetes once or twice a year and a few fields were cultivated in bananas, yautias and sweet potatoes. Great growths of cactus were found in many places on the rocky soil. A prickly pear (*Opuntia* sp.) was very common and there was at least one species of *Cereus* and another form not known to me. These cactus growths with a few bushes and small trees covered large areas on the stony hills, and bound together with creepers, formed a dense growth difficult of passage. A slender line of mangroves bordered the inner bay and on the sandy outer beaches were great growths of Uvas de playa (*Coccolobis* sp.). The flamboyant tree was common and in April was in bloom. At a distance the symmetrical trees thrust up their heads like scarlet tents. The spiny Rallo (*Acacia farnesiana*) and the equally thorny Asoto Caballo (*Randia aculeata*) were abundant in the pastures and threatened to overwhelm the grassland.

The mongoose has not been introduced into Culebra Island fortunately for the existing fauna. Rats are common and their nests were seen in cocoanut palms. A *Molossus* was the only bat observed. It was common in early twilight and harbored in

crevices about houses. Rabbits have been introduced on a small island in the inner bay and have fairly overrun it. None have come ashore though only a hundred yards or so of water separate them from the main island.

Among lizards *Ameiva exul* was common and I collected one specimen of *Mabuya sloani*. Two *Anolis* were abundant (*Anolis cristatellus* and *A. stratulus*).

BIRD LIFE.

At the present time 53 species of birds are known from Culebra Island. One other, *Phaëthon æthereus*, is included as of uncertain status. Of the valid species 49 have been actually observed or collected by the writer and others, while five are included on the strength of reports made by residents on the island. Three forms of birds that are truly Porto Rican are found, viz.:

Myiarchus antillarum. *Holoquiscalus brachypterus.*
Tiaris o. bryanti.

There are therefore 22 birds that may be considered as endemic to the fauna of Porto Rico that do not reach Culebra. There are five missing on Culebra of those that extend their range as far as Vieques Island. Three of those lacking are common on Vieques. Following is the list:

Saurothera vicilloti (?) *Gymnasio nudipes* (?).
Melanerpes portoricensis. *Tolmarchus taylori.*
Dendroica adelaidæ.

The avifauna of Culebra is seen to be much poorer than that of Porto Rico and to show a slight decrease in the number of forms below that of Vieques. There are four birds ranging to Culebra that do not reach Porto Rico though all but the first one are found on Vieques, viz.:

Geotrygon mystacea. *Sericotes h. holosericeus.*
Microlyssa e. exilis. *Elainea m. martinica,*

BIRDS OF LOUIS PEÑA AND CULEBRITA ISLANDS.

During the work on Culebra Island the writer crossed on April 11 to Louis Peña or Southwest Cay lying just beyond the outer harbor at Playa Sardine. The following 14 species were noted on this visit:

<i>Phaëthon americanus.</i>	<i>Margarops f. fuscatus.</i>
<i>Fregata magnificens.</i>	<i>Vireosylva c. calidris.</i>
<i>Chæmepelia p. trochila.</i>	<i>Setophaga ruticilla.</i>
<i>Zenaida z. lucida.</i>	<i>Seiurus noveboracensis</i> subsp.
<i>Coccyzus m. nesiotus.</i>	<i>Dendroica p. bartholemica.</i>
<i>Tyrannus d. dominicensis.</i>	<i>Compsothlypis a. usneæ.</i>
<i>Elainea m. martinica.</i>	<i>Cæreba portoricensis.</i>

On April 15 the following 19 forms were observed on Culebrita Island:

<i>Pæcilonetta bahamensis</i>	<i>Streptoceryle a. alcyon.</i>
<i>Hæmatopus palliatus</i> (reported)	<i>Sericotes h. holosericeus.</i>
<i>Arenaria i. morinella.</i>	<i>Tyrannus d. dominicensis.</i>
<i>Pisobia fuscicollis.</i>	<i>Elainea m. martinica.</i>
<i>Sterna maxima.</i>	<i>Margarops f. fuscatus.</i>
<i>Chæmepelia p. trochila.</i>	<i>Mimus p. orpheus.</i>
<i>Zenaida z. lucida.</i>	<i>Vireosylva c. calidris.</i>
<i>Columba squamosa.</i>	<i>Dendroica p. bartholemica.</i>
<i>Crotophaga ani.</i>	<i>Cæreba portoricensis.</i>
	<i>Tiaris b. omisssa.</i>

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ANNOTATED LIST.

1. **Podilymbus podiceps antillarum** Bangs. ANTILLEAN PIED-BILLED GREBE.— Reported from the lagoons.

2. [**Phaëthon æthereus** Linnæus. RED-BILLED TROPIC-BIRD.— Catesby (*Natural History of Carolina*, etc., 1743, appendix, p. 14) says that this species breeds in great numbers on some little islands at the east end of Porto Rico. Culebra or rocks near it may have been included.]

3. **Phaëthon americanus** Grant. YELLOW-BILLED TROPIC-BIRD.— On April 11 six or eight tropic-birds were circling about a rocky point on Louis Peña Island. At a distance the elongated rectrices were not visible so that the birds were mistaken at first for gulls. Three were collected but one blew out to sea and was lost. One wing-tipped bird bit me viciously when I grasped it. Other tropic birds were seen on April 13.

4. **Pelecanus occidentalis** Linnæus. BROWN PELICAN.— Common. In the shallow bay at Playa Sardine from two to twenty pelicans were found daily. Most of them had the seal brown cervical feathers of the breeding plumage developed but a few were still in dark immature plumage. The water in the bay was shallow and small fish were abundant. In feeding the pelicans rose, two or three together to circle thirty or forty feet in the air. When fish were sighted the birds dove one after another. Or when nothing appeared they set the wings and glided down over the surface of the water and then rose to circle again. In diving the birds turned straight down. The wings were closed just before the water was reached and the bird disappeared entirely under the surface. In a few seconds it would reappear, fly heavily for a few feet, settle on the water facing the wind and hold the point of the bill down to drain the pouch. When this was accomplished the point of the bill was thrown up and out and the captured fish were swallowed with a gulp. This done the pelican would rise and join its circling companions once more. In diving in very shallow water the birds turned their breasts and spread their wings to check their momentum never going below the surface. When satisfied all rested on rocks along the shore in characteristic pelican attitudes. On the west coast of Porto Rico fishermen believe that these birds when old and feeble commit suicide by hanging by the head from some crevice in the rocks.

5. **Sula leucogastra** Boddaert. BOOBY.— Boobies were said to come in flocks the first of May to nest on two small rocks north of Culebrita Island. None were seen.

6. **Fregata magnificens** Matthews. MAN-O'-WAR BIRD.— Seen

occasionally flying or circling high in the air. On April 15 one came over the boat as I was crossing to Culebrita and I shot but failed to secure it.

7. ***Butorides virescens cubanus*** Oberholser. CUBAN GREEN HERON.—Green Herons were fairly common in the mangroves bordering the bay known as Ensenada Honda. They were very wild. A few were seen on the lagoon called Flamenco and two were collected on April 9 and 13.

8. ***Florida cærulea cærulescens*** (Latham). LITTLE BLUE HERON.—This species was heard and seen occasionally about Ensenada Honda. One was collected February 9, 1899, by Dr. J. D. Milligan of the "Fish Hawk."

9. ***Phœnicopterus ruber*** Linnæus. FLAMINGO.—Flamingoes were said to have been found formerly on Culebra Island. The lagoon known as Flamenco receives its name from this bird.

10. ***Marila affinis*** (Eyton). LESSER SCAUP DUCK.—At the time of my arrival on Culebra Island there were about twenty-five ducks on the lagoon at Flamenco. None were secured but they were supposed to be this species. Eight were still present April 21.

11. ***Pœcilonetta bahamensis*** (Linnæus). BAHAMA PINTAIL.—A few of these ducks were seen with the lesser scaup ducks on the lagoon at Flamenco. April 9 two birds in worn plumage were secured by Don Pedro Marqués at Playa Brava. April 15 I found about twenty-five in a nearly dry lagoon on Culebrita Island and secured several. The flight of these birds is swift like that of a teal but on the wing the long neck makes them resemble *Dafila acuta*. This flock contained birds of both sexes about to breed and among them was one immature bird two-thirds grown.

12. ***Falco sparverius loquacula*** Riley. PORTO RICAN SPARROW HAWK.—A common resident. These birds were nesting at the time of my visit and were very tame. A female taken April 6 had an egg in the oviduct nearly ready to be deposited. Others examined had the tips of the rectrices worn to spines through abrasion in the nesting cavity. These sparrow hawks were alert and noisy. One was seen pursuing a Red-tailed Hawk screaming shrilly. And one day as I was climbing a steep hillside one came darting swiftly down at my head and was dropped only a few feet away. They were feeding largely on lizards picked expertly from rocks or tree trunks and were seen pursuing birds unsuccessfully.

13. ***Buteo borealis*** (Gmelin). RED-TAILED HAWK.—Red-tailed Hawks were seen occasionally soaring over the forested hill tops.

14. ***Pandion haliaëtus carolinensis*** (Gmelin). OSPREY.—Single Ospreys were observed circling over hills near the sea on April 8 and 17. This species is probably a regular winter visitant.

15. ***Fulica caribæa*** Ridgway. CARIBBEAN COOT.¹—April 13 before daylight one of these birds was shot at the border of a lagoon. The skin of this bird was stolen by a cat. Another coot was seen on April 19 but was not secured. These birds I thought were migrants. They may nest in one or two localities.

¹ It has been found recently that the coot from Porto Rico is *F. caribæa* instead of *F. americana* (cf. Wetmore, 1916, p. 34).

16. **Gallinula galeata galeata** (Lichtenstein). FLORIDA GALLINULE. — April 19 at daylight one of these gallinules was heard clucking in the mangroves bordering a lagoon. As it flew out I shot it. This bird and the coots observed were without doubt migrants. The lagoons here are not suited for their nests as there are no marshy growths around them.

17. **Rallus longirostris caribæus** Ridgway. CARIBBEAN CLAPPER RAIL. — Clapper Rails were common in the fringe of mangroves bordering the bay Ensenada Honda keeping entirely to the densest growth. Their loud explosive notes came all day long from the mangroves but only one bird was seen and collected. Though vociferous enough when not molested when they found that they were being followed they became silent and slipped away through the dense growth. They were heard grunting at night from the swamps at the foot of the hill below my house.

18. **Hæmatopus palliatus** Temminck. OYSTERCATCHER. — Oystercatchers were said to come at times to rocky points on Culebra and Culebrita Islands. They were known locally as the Coracolero.

19. **Eupoda wilsonia rufinucha** (Ridgway). RUFOUS-NAPED PLOVER. — There is a single bird in the U. S. National Museum collected on Culebra by Dr. J. D. Milligan of the "Fish Hawk" on February 11, 1899.

20. **Arenaria interpres morinella** (Linnæus). RUDDY TURNSTONE. — April 15 three or four of these birds were feeding on a mudbar in a lagoon on Culebrita. One was taken.

21. **Actitis macularia** (Linnæus). SPOTTED SANDPIPER. — Winter visitant. Common during the time of my visit. A few spotted sandpipers were seen along the sandy beaches but the greater number were found in the mangroves. As I sat watching for Clapper Rails they came walking all about me on the open muddy floor of the swamp, gleaning around the projecting roots and wading through shallow pools of water. A female taken April 9 was molting into spotted plumage.

22. **Pisobia fuscicollis** (Vieillot). WHITE-RUMPED SANDPIPER. — Two were seen April 15 on the north shore of Culebrita Island. One was shot but fell in a channel and was carried away by the currents.

23. **Larus atricilla** Linnæus. LAUGHING GULL. — One was seen April 13 flying above Playa Sardine and on the fifteenth four or five were perched on a buoy in Ensenada Honda. One of these was taken. After this date they were seen often circling over the inner bay sometimes high in the air.

24. **Sterna maxima** Boddaert. ROYAL TERN. — Usually a few of these terns were feeding with the pelicans in the shallow bay at Playa Sardine. Daily they came flying over the town high in the air calling harshly. On one occasion a flock of fifty or sixty passed over pursuing a frigate bird. On another day a frigate bird was seen closely following a tern which zigzagged from side to side in efforts to escape. Near Culebrita Island, April 15, a hundred or more were circling over a flat rocky islet. From their actions I thought that they were preparing to nest here. One was taken April 11.

25. **Geotrygon mystacea** (Temminck and Knip). TEMMINCK'S

GROUND-DOVE.— There is a male in the U. S. National Museum taken on Culebra Island by Mr. A. B. Baker, February 9, 1899.¹

26. *Chæmepelia passerina trochila* Bonaparte. PORTO RICAN GROUND DOVE.— Resident. Ground doves were among the most abundant birds on the island. They were found in the roads and through the fields sometimes gathered in flocks of a dozen or more. About the lighthouse on Culebrita Island they were common and when alarmed darted away into shelter of the cactus. When Sparrow Hawks were in sight it was difficult to make them fly but on other occasions they whirled up in great confusion. There was no indication of breeding as yet in a series that were collected.

27. *Zenaida zenaida lucida* Noble. ZENAIDA DOVE.— Resident. Fairly common in the dense growths of dry forest. On the ground these doves appear much like Mourning Doves. One was taken on April 10.

28. *Patagioenas squamosa* (Bonnaterre). SCALED PIGEON.— Resident. Formerly these large pigeons were said to be common but now few are left. April 10 one flew from a clump of mangroves and lit above me. This bird was collected. Another was heard hooting but could not be found.

29. *Amazona vittata gracilipes* Ridgway. CULEBRA PARROT.— Formerly parrots were common on Culebra Island but now they are supposed to be extinct. Their destruction is due to the fact that they were considered a table delicacy and were hunted continually. When common they were said to do considerable injury in the plantations of bananas and plantains. Two specimens in the National Museum were collected by A. B. Baker on February 11 and 12, 1899. Another bears merely the date 1899.

30. *Coccyzus minor nesiotus* Cabanis. JAMAICAN MANGROVE CUCKOO.— Resident. These cuckoos were fairly common on Culebra Island and were seen on Culebrita and Louis Peña. Specimens were collected on Culebra April 13, 17 and 19, and on Culebrita, April 15.

31. *Crotophaga ani* Linnaeus. ANI.— Resident. The Ani was very common on Culebra Island. These birds were found in flocks of from six to twenty individuals in the open pastures. They fed largely around the cattle, running, hopping and flying in endeavors to keep ahead of the work bulls browsing through the grass that they might secure the insects frightened up. One morning about 20 were flushed from the mangroves around a lagoon where they had spent the night. One day I shot four from a flock and a land crab seized one and dragged it into a hole nearly out of sight before I could prevent it.

32. *Streptoceryle alcyon alcyon* (Linnaeus). BELTED KINGFISHER.— A winter visitant. Kingfishers were seen along the bays and lagoons and at times in the mangrove swamps. The last one was noted April 21. Señor Guillermo Morris, the lighthouse keeper on Culebrita Island, claimed that occasionally Kingfishers remained through the summer along the small channels swarming with minnows that were found between these islands.

33. *Microlyssa exilis exilis* (Gmelin). GILT-CRESTED HUMMINGBIRD.

¹ Cf. Riley, Proc. Biol. Soc. Washington, 1903, XVI, p. 14.

— On April 12 a female of this species was secured in some mangroves. On other occasions I thought that I saw these hummers but was not certain. Apparently the species is a rare resident.

34. **Sericotes holosericeus holosericeus** (Linnæus). GREEN CARIB.— Resident. These large hummers were common everywhere on Culebra but were especially abundant in the mangroves bordering the lagoons. The birds were tame and unsuspicious and showed considerable curiosity. They began nest-building in the mangroves the tenth of April and the breeding season was well under way at the time of my departure. Intruding Honey Creepers and warblers were chased through the tree tops the hummers rattling their wings loudly. Though this sound was heard many times I was unable to explain how it was made. Several nests were found by watching the females. The birds flew to their nests without fear though sometimes I discovered that they were built only a few feet from my head. The nests were of the usual hummingbird type and were placed on small limbs from ten to thirty feet from the ground. The material in most of them was a soft cottony fiber taken from cactus, while externally they were covered with lichens. On April 19 a nest containing two heavily incubated eggs was collected. Others noted were still empty. Birds were collected on April 6, 8, 9, 10, 12, 15, 19 and 20.

35. **Anthracothonax aurulentus** (Audebert and Vieillot). PORTO RICAN MANGO.— Resident. This hummingbird was not common. The few birds seen were found in brush grown pastures. Specimens were taken on April 6, 10 and 19. A male in the National Museum collection was taken on February 11, 1899, by Dr. J. D. Milligan.

36. **Tyrannus dominicensis dominicensis** (Gmelin). GRAY KING-BIRD.— A common resident. Dozens of Gray Kingbirds roosted in the mangroves about the lagoon at Flamenco. In the morning at the first indication of coming light one would fly out calling loudly while others answered from below. From then until the sun was half an hour high the birds called incessantly from perches or on the wing making a considerable volume of sound. Following this morning concert they spread through the hills to feed. Signs of breeding were noted by April 10 and from then on the birds were often seen in pairs. April 13 one was seen carrying nesting material. Specimens were collected on April 6, 8, 10, 13 and 17.

37. **Myiarchus antillarum** (Bryant). ANTILLEAN FLYCATCHER.— On April 6 and 20 the unmistakable whistled notes of this flycatcher were heard near Punto Soldado but in the dense forest growth the bird could not be found. The species has not been recorded before from Culebra.

38. **Elainea martinica martinica** (Linnæus). ANTILLEAN ELAINEA.— Fairly common in suitable localities. I believed them to be summer visitants here as on Vieques. The species had not been recorded from the island until my visit.

On Culebra the Elaineas frequented thick growths of cactus and spiny shrubs on the dry hillsides. They were more settled here than I had found them on Vieques in March. The birds moved about little, flying a few feet

at a time and then remaining perfectly still. A times attracted by their explosive notes I watched for half an hour without catching sight of them. Twice I heard them singing a sweet warbling song. As on Vieques Island they were few in number. About twenty were heard during my stay. Birds were collected on April 15 and 20. The species was seen on Louis Peña April 11 and Culebrita April 15.

39. **Margarops fuscatus fuscatus** (Vieillot). PEARLY-EYED THRASHER.—A common resident. These birds frequented dense brushy growth but were easily called into the open by "squeaking." They were found at times at the borders of mangrove swamps. One was seen on a low perch watching the fiddler crabs on the mud beneath it with great interest. Specimens were secured on April 6, 10, 15 and 19.

40. **Mimus polyglottos orpheus** (Linnæus). JAMAICAN MOCKINGBIRD.—A fairly common resident. The mockingbird was less common on Culebra than on Vieques. They were found usually in the trees and bushes of upland pastures. At the time of my visit the birds were breeding and the males were singing constantly. Birds were collected on April 6, 8, 17 and 20.

41. **Vireosylva calidris calidris** (Linnæus). JAMAICAN VIREO.—This vireo was noted on Louis Peña Island and Culebrita. None were seen on Culebra itself. One was taken on Louis Peña April 11. It is probably a rare summer visitant to the region under discussion.

42. **Setophaga ruticilla** (Linnæus). REDSTART.—A winter visitant, fairly common at the time of my work on Culebra. The last Redstart noted was seen April 19. Though a few adult males were observed most of the birds recorded were females or males in immature plumage. Specimens were taken April 9 and 12.

43. **Seiurus noveboracensis noveboracensis** (Gmelin). WATER-THRUSH.—A fairly common winter visitant. In April Water-Thrushes were migrating and their numbers varied from day to day. They were heard singing daily in the mangrove swamps. Specimens were collected April 6 and 12.

44. **Seiurus noveboracensis notabilis** Ridgway. GRINNELL'S WATER-THRUSH.—One specimen of this form was collected April 12. The relative abundance of the two subspecies of *Seiurus noveboracensis* can be established only by further observations.

45. **Seiurus aurocapillus** (Linnæus). OVENBIRD.—There is a specimen of the Ovenbird in the U. S. National Museum collected by A. B. Baker of the "Fish Hawk" on February 11, 1899. This species was not observed by the writer and it is probable that it had departed northward before my arrival.

46. **Dendroica discolor** (Vieillot). PRAIRIE WARBLER.—A winter visitant. The Prairie Warbler was noted April 6, 7, 9 and 10. On the ninth there was a small wave of migrant warblers and several of this species were observed. One shot on the sixth was so fat that it could not be preserved. Additional birds were taken April 9 and 10.

47. ***Dendroica coronata*** (Linnæus). MYRTLE WARBLER.— There is a specimen of the Myrtle Warbler in the U. S. National Museum secured by A. B. Baker on February 9, 1899. This species is probably a rather rare winter visitant.

48. ***Dendroica petechia bartholemica*** Sundevall. PORTO RICAN YELLOW WARBLER.— An abundant resident. The mangroves bordering the bay Ensenada Honda were favorite haunts of these birds but many were found in the trees in the dry pastures. On the sandy beaches they were found in dense growths of *Uvas de playa* (*Coccolobis* sp.). In April they were paired and were about to nest. The males sang through the heat of the day, a song resembling that of *Dendroica æstiva*. Several birds in odd transition plumage from juvenal to adult were taken. A series was collected on April 8, 9, 11, 12, 13 and 15.

49. ***Compsothlypis americana usneæ*** Brewster. NORTHERN PARULA WARBLER.— A common winter visitant. In April the Parula was the most common of the migrating warblers. On April 11 in a warm sheltered growth of mangroves I heard one singing and from then on they sang often, sometimes a mere whisper but usually as loudly as they do in their northern homes. Two were collected on April 9 and the birds were observed until April 19.

50. ***Mniotilta varia*** (Linnæus). A winter visitant. One was taken from a small flock of migrating warblers on April 9. Another was seen on April 12.

51. ***Cœreba portoricensis*** (Bryant). PORTO RICAN HONEY CREEPER.— A common resident. Honey Creepers were found everywhere on the island where there was cover for them. April 9 a bird was seen building a nest, as yet merely a loose ball of grass though the circular opening was already formed. Both male and female were seen working on other nests. This month apparently began a new breeding season. Young birds still having the superciliary stripe yellow were common. The Honey Creepers used their nests as roosts and I noticed that they did not appear in the morning until half an hour or more after other birds were active. A large series was collected between April 6 and 20. Grains of sand were found in 73 out of 149 stomachs examined from Porto Rico and the surrounding islands. This is strange as very little vegetable matter was eaten.

52. ***Holoquiscalus brachypterus*** Cassin. PORTO RICAN BLACKBIRD.— These blackbirds were said by Don Pedro Marqués to be found at times near Playa Brava. I saw none personally.

53. ***Tiaris bicolor omissa*** (Jardine). CARIB GRASSQUIT.— A common resident. At the time of my visit many of these Grassquits were breeding. Half a dozen pairs were nesting in the tall grass around one water hole. In other localities hundreds were feeding in the fields in loose flocks. On Culebrita these little finches were very common about the lighthouse. Many specimens were taken between April 6 and 20.

54. ***Tiaris olivacea bryanti*** (Ridgway). BRYANT'S GRASSQUIT.— A single male was collected April 8. No others were seen.

NOTES ON A FEW OF THE RARER BIRDS OF SAUK
AND DANE COUNTIES, WISCONSIN.

BY H. L. STODDARD.

PART of the following notes were made during a four years' residence at Prairie du Sac, from 1906 to 1910, but principally from April 9 to June 12, 1911, while collecting material for nesting groups of birds for the Milwaukee Public Museum, and also from May 25 to July 4, 1913, while engaged on similar work for the N. W. Harris Public School Extension of the Field Museum, Chicago.

The region under consideration includes the Township of Sumpster, Honey Creek, and Prairie du Sac, in Sauk County, and that part of the Township at Mazomanie, Dane County, that borders on the Wisconsin River. Particular attention was paid to the Baraboo Bluffs, a very rough, and in most places heavily wooded, range of hills of great interest to the Geologist and bird lover. As this region is in most sections rather difficult to transverse even on foot, owing to the lavish hand with which Nature has scattered quartzite boulders of all sizes and shapes over the landscape, it still retains much of its natural wildness and beauty, and is the home of numerous species of birds and mammals not found in the surrounding country. Virginia Deer are at the present time very numerous, and hawks and owls, Ruffed Grouse, and many species of warblers make this region their summer home. Brook trout are also found in Otter Creek, which finds its source in the numerous springs. Considerable time was also spent in the bottom lands of the Wisconsin River in the few remaining patches of heavy timber. Since these notes were made, the character of the river has been greatly changed for a considerable distance above Prairie du Sac by the great power dam, recently erected at that town, and the newly formed Lake Wisconsin ought to prove a great attraction for numerous species of water birds.

1. **Colymbus nigricollis californicus.** AMERICAN EARED GREBE.—Five of these Grebe were killed out of a flock of six, on the Wisconsin River, a few miles north of Prairie du Sac, April 30, 1909, by a hunter who gave

them to Mr. E. D. Ochsner, taxidermist of Prairie du Sac. Three of these were mounted, and are in his collection. The other two, both males in full plumage, he very kindly gave to me, and they are mounted, and in my possession. Kumlein and Hollister (Birds of Wisconsin, 1903, p. 6) give three records for this species for Wisconsin.

2. **Coturnicops noveboracensis.** YELLOW RAIL.—One specimen, a female, was caught in Sumpter, Sauk County, April 23, 1908. The bird was observed in a plowed field, and after a lively chase, was captured by Mr. A. O. Wagner and the writer, and is mounted in my collection. Another, a male in beautiful plumage, was collected across the river in Columbia County, May 1, 1911.

3. **Astur atricapillus atricapillus.** AMERICAN GOSHAWK.—Large numbers of this species appeared in Sauk County early in the winter of 1907-08. I took four specimens in a single trap on the following dates: one female, Dec. 6, one female Dec. 13, one male Jan. 9, and one male Feb. 20. These, with at least a dozen other specimens handled in the flesh, were all in the adult plumage. A number were also observed in the woods during the winter, and from the numerous remains of their feasts on Grouse and Quail, the game must have suffered greatly during their stay. Have one record also for 1906, an adult female, taken Nov. 10. One specimen was also seen June 3, 1911. The identification of this specimen was positive, as it flew across in front of me, giving a good view of the breast.

4. **Accipiter cooperi.** COOPER'S HAWK.—As this hawk is generally considered as a summer resident only, the following record may be of interest. An adult male in full plumage taken Feb. 5, 1907, in Sumpter, Sauk County.

5. **Buteo lineatus lineatus.** RED-SHOULDERED HAWK.—While this species is far from common, a few pairs breed in the heavy timber along the Wisconsin River, and Honey Creek in Sauk County. A nest, four young in the downy stage, and one addled egg taken May 18, 1911; an adult male and female and three partly feathered young taken June 15, 1913.

6. **Falco peregrinus anatum.** DUCK HAWK.—A nest of this hawk was located May 10, 1911, on a ledge on the face of a nearly perpendicular sandstone bluff, overlooking the Wisconsin River, on the Sauk County side. The nest was only a slightly hollowed out spot in the sand, overlaying the sandstone, and contained two eggs. Ten days later the adult female, one egg and one downy young were collected. Mr. Bert Laws, a keen observer, who lives just across the river from this bluff, and who was instrumental in the location of the nest, tells me that nearly every season, for about twenty-five years to his knowledge, a pair of these birds have nested on this, or one of the adjoining bluffs. This pair made no attempt to defend their nest, but flew about screaming. The female struck and chased away a Red-tail Hawk, whose circling brought it too close to the Duck Hawk eyrie. These Red-tails had their nest on a rock ledge of another bluff less than a

quarter of a mile down the river, the only nest of the Red-tail that I have seen in such a location. The Red-tail is a common nesting species, all through the well timbered sections of this region, while the Duck Hawk has only been recorded as breeding in Wisconsin a very few times.

7. **Aquila chrysaëtos.** GOLDEN EAGLE.—Specimens of this eagle are not infrequently taken in Sauk County during the winter. A large female in my possession was taken in Feb., 1908, another, a male, was taken Feb. 23, 1909. That this species nested in Sauk County prior to 1908, there can be no doubt. There was a deserted nest still in good state of preservation on a sheltered ledge about sixty feet above the ground, on the same bluff where the Duck Hawks were found breeding. It was littered with feathers of pigeons, ducks and other birds, and evidently the Duck Hawks found it a convenient place in which to eat their game. This nest was typical of the Golden Eagle, made principally of juniper limbs, some of which were over an inch and a half in diameter. Mr. Bert Laws, who frequently saw the birds and described them to me, informed me that the nest was used for one or two seasons prior to 1908. Before that time they had used a nest on an adjoining bluff, which was destroyed. I have seen specimens of the Golden Eagle on two occasions in the Baraboo Bluffs, in early summer.

8. **Cryptoglaux acadica acadica.** SAW-WHET OWL.—Rather rare in Sauk County. One specimen taken March 4, and one on March 23, 1907.

9. **Phloeotomus pileatus abieticola.** NORTHERN PILEATED WOODPECKER.—A number of these fine birds still nest in the heavy river timber along the Wisconsin River, both in Sauk and Dane counties, and will doubtless hold their own till the original stand of timber is cut away, as they are extremely wary, especially in fall and winter, and breed in the mosquito infected river bottoms where they are seldom molested. There are only a few scattered patches of suitable woodland left in this region however, and those are fast disappearing. Have never observed them or signs of their work in the Baraboo Bluffs, which are heavily wooded, and in this region at least, they are almost wholly confined to the river timber, though family parties of four or five may be observed occasionally in late summer, somewhat out of their usual range. Have only two nesting records though they have frequently been observed during the breeding season. May 31, 1911, a male and female and three young were taken from a broken-off river birch-stub. Nest about twenty-five feet from the ground in partly flooded river bottom on the Sauk County side. June 11, 1913, another pair and three nearly fledged young were taken from a similar site on the Dane County side of the river. This nest was situated about thirty feet from the ground in an old and very brittle birch, which broke off at the base as soon as I started to climb, though the tree was nearly a foot and a half in diameter. The birds undoubtedly find this "punk" wood very easily worked, as they had excavated an unusually large cavity, measuring entrance hole, three and a fourth by four and a half inches, with a total depth of twenty-three inches, and an average diameter of seven by nine

inches, narrowing somewhat nearer the bottom. As soon as the nesting stubs were jarred, the young commenced their "hissing" noise, similar to young Flickers, but a great deal louder.

10. **Melanerpes carolinus.** RED-BELLIED WOODPECKER.—This handsome species is a fairly common resident in certain favorable localities, in the heavy bottom land timber along the Wisconsin River, and Honey Creek, in the same locality frequented by the Pileated Woodpeckers. Quite often observed in the village of Prairie du Sac, during the winter. A male and female and three partly feathered young were collected on the Dane County side of the river June 1, 1911. This nest was in a small and very hard dead limb of an elm tree, over a slough. The entrance hole was on the under side of the limb which extended from the tree at an angle of about forty-five degrees.

11. **Empidonax virescens.** ACADIAN FLYCATCHER.—This species was found breeding in considerable numbers along small water courses in the Baraboo Bluffs in June and July, 1913. A series of nine adults and a number of nests collected. Was much pleased to find this bird breeding in this region as Kumlein and Hollister (Birds of Wisconsin Hypothetical List, 1903, p. 129) say of this species, "We have never taken this species in Wisconsin, and all the observers with whom we have had correspondence, have also failed to find it. Hoy and some later writers include it in their lists, but evidently, without positive proof. The fact that Hoy appears to have been somewhat mixed on his flycatchers, as indeed many at that time were, and that all recent collections fail to produce a specimen, although furnishing both varieties of *traillii*, whereas Hoy included but one, of course, leads us to believe that a mistake has occurred, and so we await future developments."

12. **Hesperiphona vespertina vespertina.** EVENING GROSBEAK.—Have observed this species only during the winter of 1909, when they were quite common in the months of February and March, when a number of specimens were collected. The birds were observed to spend a great deal of time feeding on the winged seeds of the box-elder.

13. **Carpodacus purpureus purpureus.** PURPLE FINCH.—Seen occasionally in spring and fall, but appears to be rather rare. One adult male collected from a flock of five or six that were feeding on Juniper berries, February 23, 1909.

14. **Bombycilla garrulus.** BOHEMIAN WAXWING.—This species visited Sauk County in large numbers in the winter of 1908-09. One flock estimated two hundred, seen March 1, and a number of specimens in high plumage were secured.

15. **Protonotaria citrea.** PROTHONOTARY WARBLER. In the partly flooded river timber, on both the Sauk and Dane County sides of the Wisconsin River, this beautiful warbler breeds rather numerous in certain restricted areas. In two days, June 9 and 11, 1913, five nests were located containing eggs or newly hatched young; four of these nests being located in dead river birch stubs over water, and the fifth in a dead maple stump near a slough.

16. **Vermivora pinus.** BLUE-WINGED WARBLER.— This rare Wisconsin warbler probably breeds in the Baraboo Bluffs and possibly also in the river bottoms, in suitable localities; at least the following records would seem to indicate that such is the case, though no nests were located. A pair collected June 22, 1913, and a female in the same locality June 24, and one male each, June 9 and 11, in the Dane County river bottoms.

17. **Vermivora chrysoptera.** GOLDEN-WINGED WARBLER.— Two broods of young of this species, just able to fly, were observed in the Baraboo Bluffs, July 1, 1913. Have also the following records of specimens collected in Sauk County: adult male, June 12, adult female June 22, and a pair, July 1, 1913.

18. **Dendroica cerulea.** CERULEAN WARBLER.— Near the source of Otter Creek in the Baraboo Bluffs, there are large tracts of tall timber, principally of hard maple, basswood and oak, growing on the level, and rather swampy ground, between the hills. In this region, the Cerulean Warbler is a common summer resident, and undoubtedly breeds, though I did not succeed in locating any nests. A number of specimens were collected, (May 30 to July 3, 1913) nearly all of which were the easily located males, only one female being secured.

19. **Dendroica fusca.** BLACKBURNIAN WARBLER.— As a migrant, this species is fairly common at times in the Baraboo Bluffs, but I have only two summer records. One adult male being secured June 27, and another July 1, 1913.

20. **Oporornis formosa.** KENTUCKY WARBLER.— Two specimens of this rare species (for Wisconsin) were seen June 9, 1913, and one adult male was collected. As the actions of the birds strongly indicated that there was a nest in the vicinity, a very careful search was made, but without result. Kumlein and Hollister (Birds of Wisconsin, 1903, p. 117) give seven records of this species, six of which were for Lake Koshkonong, in spring.

21. **Icteria virens virens.** YELLOW-BREASTED CHAT.— Have only one record for this species, an adult male, collected in Dane County, June 13, 1913. A few were also heard.

DESCRIPTION OF A NEW SUBSPECIES OF THE
WESTERN MEADOWLARK

BY S. F. RATHBUN.

SOME time ago my attention was called to certain apparent peculiarities in the meadowlarks inhabiting the coast region of the State of Washington. Since that time I have been able, by special efforts, to gather together a considerable series from the Pacific slope of Washington and Oregon, which series now clearly shows that the bird from this region is subspecifically distinct from that of the interior of the United States. In view of this fact it becomes necessary to separate it formally, and I therefore propose to call it

***Sturnella neglecta confluenta*, subsp. nov.**

NORTHWESTERN MEADOWLARK.

CHARS. SUBSP.—Similar to *Sturnella neglecta neglecta*, but the bars on tail and tertials broader and much more confluent; upper parts darker throughout, and their black areas more extensive; yellow of under parts averaging darker; spots and streaks on the sides of breast, body, and flanks larger and more conspicuous.

DESCRIPTION.—Type, adult male, No. 105, collection of S. F. Rathbun; Seattle, Washington, April 5, 1895; S. F. Rathbun. Upper parts mixed blackish, dark brown, umber, and buffy; pileum with a broad central streak of cream buff; tail brownish gray, broadly barred with brownish black, the bars on all but the terminal portion of the rectrices much confluent, the outer three pairs of tail-feathers extensively white; wings fuscous, all the feathers margined with pale brown, the tertials heavily barred with blackish, the greater wing-coverts more narrowly barred on their exterior webs with blackish brown; edge of wing yellow; supraloral stripe, breast, abdomen, chin, and throat, rich yellow, this color extending laterally over the greater portion of the malar region; superciliary stripe dull cream buff; breast and jugulum with a broad crescent of black; sides, flanks, and crissum, buffy or whitish, broadly streaked with dark brown and blackish; sides of breast with large brownish black spots; lining of wing dull white.

GEOGRAPHICAL DISTRIBUTION.—Pacific coast region of southwestern British Columbia and northwestern Washington, south to northwestern Oregon, and east to the Cascade Mountains.

In the color pattern of wings and tail this new subspecies of *Sturnella neglecta* is curiously similar to *Sturnella magna*, but of course its other characteristics readily distinguish it from that species. This new race is of particular interest in view of the fact that heretofore no subspecies of *Sturnella neglecta* have been distinguished; but *Sturnella neglecta confluenta* is fully as well marked a form as the subspecies of *Sturnella magna*, and practically none of the specimens in our extensive series cause any difficulty whatever in identification. The confluence of the bars on the tail is probably the best subspecific character, but the general coloration of the upper parts makes it readily distinguishable in both summer and winter plumage. There is no difference in size.

A specimen from Comox on Vancouver Island, British Columbia, in the collection of the Biological Survey of the Department of Agriculture, belongs undoubtedly to this race; and I have traced it as far south as Salem, Oregon. It possibly occurs as well farther south along the coast of Oregon. All breeding specimens of *Sturnella neglecta* from east of the Cascades prove to belong to the typical race, so that its limit of distribution eastward is fairly presumed to be this range of mountains.

The type of *Sturnella neglecta*¹ was obtained by Audubon at old Fort Union, North Dakota, and birds from the Great Plains region have been considered as typical in our comparisons. All names applied to this species pertain without doubt to the interior form, which is typical *Sturnella neglecta neglecta*, and therefore the race from the northwestern coast of the United States here distinguished is entitled to a new name as above given.

I am indebted to the kindness of Mr. J. M. Edson, of Bellingham, Washington, and to the University of Washington, for the loan of some of the specimens used in the preparation of this paper, and I wish here to express my sincere thanks for their courtesy.

Thirty specimens of *Sturnella neglecta confluenta* have been examined from the following localities:

British Columbia — Comox.

¹ Audubon, *Birds Amer.*, oct. ed., VII, 1843, p. 339, plate 489.

Washington — Bellingham, Whatcom Co.; Auburn, Duvall, North Bend, Seattle, Snoqualmie, King Co.; Kiona Benton County¹; Enumclaw, Tacoma, Pierce Co.; Olympia, Thurston Co.

Oregon — Forest Grove; Bush Lake near Salem; North Salem.

Measurements in millimeters of *Sturnella neglecta confluenta* are as follows:

No. & Collection.	Sex.	Locality.	Date.	Wing.	Tail.	Exposed culmen.	Tarsus.	Middle toe without claw.
105, S. F. Rathbun	♂	Seattle, Wash.	Apr. 5, 1895	125	76	34	39	24
920, S. F. Rathbun	♂	Olympia, "	Sept. 25, 1916	122	79	32	37	27
921, S. F. Rathbun	♂	Tacoma, "	Oct. 8, 1911	118	77	33.5	36.5	28
922, S. F. Rathbun	♂	Auburn, "	Sept. 21, 1916	132	82	32	36	26
923, J. M. Edson	♂	Bellingham, "	Mar. 7, 1915	125	80	31	36.5	27.5
139400, U. S. N. M.	♂	Comox, B. C.	June 11, 1895	127	75	34	35.5	27
112, S. F. Rathbun	♀	Seattle, Wash.	Apr. 21, 1895	108	62	28	34.5	26.5
924, S. F. Rathbun	♀	Enumclaw, "	Sept. 21, 1916	110	65	28	34	24.5
925, S. F. Rathbun	♀	Auburn, "	Sept. 21, 1916	109	65	30	36	25
926, S. F. Rathbun	♀	Duvall, "	Oct. 4, 1916	111.5	70	30	35	23
1107, Univ. Wash.	♀	Salem, Oregon	Mar. 16, 1891	115	67.5	29.5	36	26
Average of six adult males				124.8	78.2	32.8	36.8	26.6
Average of five adult females				110.7	65.9	29.1	35.1	25.

DESCRIPTION OF *TELESPIZA ULTIMA* FROM NIHOA ISLAND.

BY WILLIAM ALANSON BRYAN.

CONTINUING my note on the discovery of a new land bird on the island of Nihoa, which appeared in the January, 1916, number of 'The Auk,' I am now able to report that through the interest of Lieut. W. H. Munter, specimens have been secured which on comparison with the "Laysan finch," *Telespiza cantans* Wilson, fully warrant the separation of the Nihoa birds under the new name that was only withheld in my former article for want of a definite type specimen.

In view of the fact that the species under consideration is

¹ Not breeding at this locality.

very liable to be the last native passerine bird to be discovered in the Hawaiian Group, the following name seems appropriate for this form occurring on remote Nihoa: viz.,

***Telespiza ultima*, new species.**

TYPE.—♂ ad. (orig. no. 1), Nihoa Island, Hawaiian Group, February 12, 1916. Collected by Lieut. W. H. Munter for W. A. Bryan.

PARATYPES.—(a) ♀ (orig. no. 2), do. do.; (b) ♂ (orig. no. 3), do. do.; (c) sex ? (orig. no. 4), do. do.; (d) (orig. no. 5), specimen in formalin.

SPECIFIC CHARACTERS.—Closely resembling the Laysan species (*T. cantans*) in color but smaller in all dimensions; upper and lower mandible approximately equal in length.

DESCRIPTION OF TYPE.—(Fully adult male specimen.) Head all round and under parts to the middle of the abdomen yellow, brightest on the breast, brighter than equally adult specimens of *cantans*. Back, olive-yellow, varied with darker shaft-stripes; rump, gray, with an olive cast; upper tail coverts, olive-gray to yellowish; webs of tail feathers and primaries, brownish black, narrowly edged with yellow; wing coverts, yellowish; center of abdomen, whitish; under tail coverts, yellowish-white.

MEASUREMENT OF TYPE.—Total length, 5.65 in.; wing, 3.05; tail, 2.20; tarsus, .85; culmen, .52; depth of bill, .42.

Remarks. This species, occupying the restricted habitat of one of the smaller and older volcanic islands of the group, has evidently been evolved through isolation from the only other existing species of the genus, a well known form occurring abundantly on the low sand island of Laysan and which in recent years has also been introduced on Midway Island.

I am indebted to Lieut. W. H. Munter for the type series, consisting of five specimens, which he secured for me on the last cruise of the U. S. R. C. "Thetis" to the Leeward Islands all of which are included in the Hawaiian Islands Bird Reservation. The birds are described as being quite fearless and were easily killed with small shot. The specimens were preserved in formalin provided for the purpose and four have since been made up as dry skins. The three cabinet specimens not described above present the following measurements in inches;

Orig. no. 2, ♀ length 5.50; wing 2.80; tail 2.05; tarsus .85; culmen .50.

" " 3, ♂ " 5.60; " 3.00; " 2.20; " .90; " .53.

" " 4, ? " 5.50; " 2.90; " 2.05; " .85; " .50.

Of this series number 2 is in the characteristic immature plumage of the Laysan species having the feathers of the head and breast blackish-brown with yellowish edges. Number 4 is more nearly mature while number 3, is only slightly less brilliant in coloring about the head and neck than the type specimen.

It will be seen by comparing the measurements and description given above, with that given in my 'Key to the Birds of the Hawaiian Group,' that the Nihoa birds are in reality a somewhat dwarfed form of the Laysan species which, owing to isolation and restricted habitat, is to be regarded as specifically distinct.

The Nihoa "finch" is a stocky, independent creature much resembling the Grosbeaks in size and appearance. Like their Laysan cousins they sing very sweetly, their song resembling that of the canary. In habit they are saucy, sociable and fearless and are so unsuspicious that they approach to within a few feet of the observer without hesitation.

On arriving at Nihoa on February 12, 1916, the landing used by the "Thetis" on the occasion of its 1915 cruise was found to be too rough to use with safety. A landing was made however in a small cove a few hundred feet to the eastward of the old landing in the following manner. One of the boat's party swam ashore, and a line was heaved from the stern of the boat and the boat then hauled close to the rocks. At a favorable opportunity the rest of the party were landed without mishap. The boat's crew then rigged a line fitted with a running rove through a block at the mast head. Dry clothing, ammunition, cameras and other articles were whipped ashore and the dinghy shifted its anchorage to a safe distance to await the return of the party.

After four hours on the island the party returned to the vessel without accident bringing with them photographs, notes and specimens of the fauna and flora that are of great interest and value.

DESCRIPTION OF A NEW SUBSPECIES OF THE
BROAD-WINGED HAWK.

BY B. H. BAILEY.

***Buteo platypterus iowensis*, subsp. nov.**

IOWA BROAD-WINGED HAWK.

DESCRIPTION.—Head, neck, body, and tibial flags, sooty brown with a slightly rufous cast due to very faint rufous edgings on the feathers. Back, and top of the head, somewhat darker. The feathers of the upper surfaces of the wings slightly worn and somewhat lighter at their margins. Concealed bases of the feathers of the head, snow white; elsewhere bases of the feathers grayish white. Each feather shows a distinct black shaft. Under tail coverts when disturbed show three or four alternating light and dark bands.

Wings: Three outer primaries deeply emarginate on the inner webs. Lining of the wings in general the same color as the body, except at the bases of the first three or four primaries of each wing, where there are a very few whitish feathers, each crossed by about four dusky bands. Exposed parts of the primaries dusky above with no evident banding; below, however, they are whitish on the inner webs, and crossed by five narrow dark bars. The tips of the primaries from below for an inch and a half appear almost black.

Spreading the secondaries they show from above, on their inner webs, sharp contrasting bars of white and dusky, which appear much less distinct on the under surface.

Tail: Exposed surface above crossed by three dark bars of the same color as the back, which alternate with two narrower grayish white bands with a narrow tip of the same color. From below, these markings are less distinct. The inner webs of the outermost tail feathers show more numerous indistinct bars.

MEASUREMENTS OF TYPE.—Length (skin) 16.50 in. 41.8 cm.; wing, 11.62 in. 29.5 cm.; tail, 7.18 in. 18 cm.; tarsus, 2.44 in. 6.2 cm.; culmen, .80 in. 1.9 cm.

Type No. 918; Coe College Museum, Cedar Rapids, Iowa; sex (?); locality, Eagle Lake, Hancock County, Iowa; date, Fall 1907; collector, James Ward.

Paratype, No. 45, collection of W. Kubichek, Iowa City, Ia., sex, male; locality, Iowa City, Iowa; date, April 21, 1913.

Paratype, collection of A. J. Anderson, Sioux City, Iowa; date, October 30, 1893; sex (?); locality, 12 miles east of Des Moines, Iowa; collector, A. J. Anderson.

The latter paratype is in immature plumage.

The first mentioned paratype differs in coloration very little from the type, the most noticeable variation being the more evident banding of the upper tail coverts and flank feathers, noticed only when these are displaced. The second paratype as it is in the immature plumage, is characterized by a tail crossed on the exposed upper surface by three narrow and one wider sub-terminal dusky band, alternating with four wider dusky gray bands and a narrow tip of the same color. The lateral tail feathers show six dark bars, alternating with lighter ones, on their inner web. The feathers of the breast in particular, and of other parts to a less degree are definitely margined with rufous, so that a decided reddish cast is given to the under part of the body. At a distance however, the immature bird cannot be distinguished from either of the other specimens which are adults.

In reviewing the birds of prey of Iowa, my attention had been called to the occurrence of these dark plumaged individuals of the Broad-winged Hawk.

Mr. Robert Ridgway described the first noticed specimen under the title "Description of a Melanistic Specimen of *Buteo latissimus* (Wils.)," in the Proceedings of the United States National Museum, Vol. IX, Oct., 1886, pp. 248-249.

In 1912 Mr. F. L. Burns monographed this species *B. platypterus platypterus* in The Wilson Bulletin, Vol. XXIII, Nos. 3 & 4, 1911. In this monograph an adult male, *B. platypterus iowensis*, is described but not named, which was taken at Portage la Prairie, Manitoba, May 30, 1900.

In the Proceedings of the Iowa Academy of Science, Vol. XIX, 1912, pp. 193-194, the writer described the specimen which is here presented as the type of a new subspecies.

Mr. Ridgway mentions that two other birds similar to the one he describes were seen by Mr. Preston in 1874 and 1884 respectively, near where the first bird secured in 1883 was taken.

Mr. F. L. Burns says, "Worthen mentions one specimen from Minnesota, of a solid dark umber, showing dark bars on tail and primaries; and Seton another collected by A. Calder, April, 1907, Winnipeg, Manitoba, sex not stated." He says also "On Feb. 23, 1908, Mr. J. H. Riley saw a very dark bird pass almost directly

overhead at Falls Church, Virginia. He informs me that he had a fairly good look at it, and that it had some white on the breast, but appeared to be very dark otherwise; whether upon being shot it would be as dark as it appeared, it would be hard to say."

At least three interesting facts are to be noticed with regard to these published accounts of dark colored Broad-wings.

First they have all been either collected or observed, except the somewhat doubtful Virginia record, in a limited area extending north and south from Winnipeg and Portage la Prairie, through Minnesota and middle Iowa, the natural route of migration.

In the second place so far as the writer has been able to ascertain, there are no intergrading specimens. Those that have been examined are very similar in general color not excepting the one before me in immature plumage.

A third point of interest is the evident dusky character of the plumage of the immature, which has hitherto been unknown.

Thanks are due to Mr. James Ward through whose kindness the type specimen was secured, and to Mr. Kubichek and Mr. Anderson for permitting the examination, at some length, of their specimens.

THIRTY-FOURTH STATED MEETING OF THE
AMERICAN ORNITHOLOGISTS' UNION.

BY JOHN HALL SAGE.

THE Thirty-fourth Stated Meeting of the American Ornithologists' Union convened in Philadelphia, Pa., Monday evening, November 13, 1916. The business meetings were held in the Council Room and Library, and the public sessions, commencing Tuesday, November 14, and lasting three days, in the lecture hall of the Academy of Natural Sciences.

BUSINESS SESSION. The meeting was called to order by the President, Dr. Albert K. Fisher. Twenty-three Fellows and fourteen Members were present. The Secretary's report gave the membership of the Union at the opening of the present Stated Meeting as 830, constituted as follows: Fellows, 46; Retired Fellows, 3; Honorary Fellows, 11; Corresponding Fellows, 55; Members, 77; Associates, 638.

Since the last meeting (May 1915) the Union suffered great loss by the death of several prominent members. The list includes, four Fellows, two Honorary Fellows, one Corresponding Fellow, two Members, and fifteen Associates, as follows:

Dr. Daniel Giraud Elliot,¹ a Founder and the second President of the Union, who died in New York City, December 22, 1915, in his 81st year; Prof. Wells Woodbridge Cooke,² a Fellow, who died in Washington, D. C., March 30, 1916, aged 58 years; Prof. Foster E. L. Beal,³ a Fellow, who died in Branchville, Md., October 1, 1916, in the 77th year of his age; Lieut. Col. Edgar Alexander Mearns,⁴ a Founder, who died in Washington, D. C., November 1, 1916, in his 61st year; Henry Eeles Dresser,⁵ an Honorary Fellow, who died in Cannes, France, November 28, 1915, in his 78th year;

¹ For an obituary notice, see Auk, XXXIII, pp. 230-231; also Memorial Address in the present number.

² For an obituary notice, see Auk, XXXIII, pp. 354-355.

³ For an obituary notice see the present number.

⁴ For an obituary notice see the present number.

⁵ For an obituary notice see Auk, XXXIII, p. 232.

John A. Harvie-Brown,¹ of Stirlingshire, Scotland, an Honorary Fellow, who died July 26, 1916, at the age of 72 years; Lieut.-Col. Edward A. Butler,² a Corresponding Fellow who died April 16, 1916, at Stokesby, England; Ewen Somerled Cameron,³ a Member, who died in Pasadena, Cal., May 25, 1915, in the 61st year of his age; Egbert Bagg,⁴ a Member, who died in Utica, N. Y., July 11, 1915, at the age of 65 years; and the following Associates: Miss Mary Bissell Ferry,⁵ who died in Norwalk, Conn., March 18, 1915, in her 66th year; Samuel Thorne, of New York City, who died July 4, 1915; Prof. Frederic Ward Putnam,⁶ who died in Cambridge, Mass., August 4, 1915, in the 77th year of his age; Prof. Donaldson Bodine,⁷ who died at Douglas Lake, Michigan, August 26, 1915, in his 49th year; Linsley Louin Jewel,⁸ who died at Saranac Lake, N. Y., September 5, 1915, in his 38th year; Dr. James C. Wilson, of Boston, Mass., who died there January 5, 1916; Rev. William Rogers Lord, who died in Dover, Mass., February 2, 1916, aged 68 years; Leslie Waldo Lake,⁹ who died in Hamburg, N. Y., February 7, 1916, in the 67th year of his age; De Lagnel Berier, of Ridgewood, N. J., who died February 11, 1916; Mrs. Jane L. Hine,¹⁰ who died in Sedan, Ind., February 11, 1916, in her 85th year; Miss Caroline P. Latimer, who died in Brooklyn, N. Y., April 19, 1916; Dr. Sven Magnus Gronberger,¹¹ who died in Washington, D. C., April 24, 1916, in his 51st year; John Claire Wood,¹² who died in Detroit, Michigan, June 16, 1916, aged 45 years; Charles Edgar Conklin, of Roslyn, N. Y., who died September 8, 1916, and Walter R. Zappey, who died in Cambridge, Mass., February 20, 1914. (Information about the death of this party only recently reached the Secretary.)

The report of the Treasurer showed the finances of the Union to

¹ For an obituary notice see *Auk*, XXXIII, p. 458.

² For an obituary notice see the present number.

³ For an obituary notice see *Auk*, XXXII, pp. 540-541.

⁴ For an obituary notice see *Auk*, XXXII, p. 540.

⁵ For an obituary notice see the present number.

⁶ For an obituary notice see *Auk*, XXXII, p. 541.

⁷ For an obituary notice see the present number.

⁸ For an obituary notice see *Auk*, XXXIII, p. 459.

⁹ For an obituary notice, see *Auk*, XXXIII, p. 233.

¹⁰ For an obituary notice, see the present number.

¹¹ For an obituary notice, see *Auk*, XXXIII, p. 355.

¹² For an obituary notice, see *Auk*, XXXIII, pp. 459-460.

be in a satisfactory condition, the accounts being audited by a Certified Accountant.

All of the officers were re-elected as follows: Albert K. Fisher, President; Henry W. Henshaw and Witmer Stone, Vice-Presidents; John H. Sage, Secretary; Jonathan Dwight, Treasurer; Ruthven Deane, William Dutcher, Joseph Grinnell, Frederic A. Lucas, Wilfred H. Osgood, Chas. W. Richmond, and Thos. S. Roberts, members of the Council.

James H. Fleming, Toronto, Canada; Harry S. Swarth, Berkeley, Cal.; and W. E. Clyde Todd, Pittsburgh, Pa.; were elected Fellows. Sergius Alexandrovich Buturlin, Wessenburg, Esthonia, Russia; Prof. Dr. Max Fürbringer, Heidelberg, Germany; and Dr. Hans Friedrich Gadow, of Cambridge, England; were elected Honorary Fellows. Dr. William L. Abbott, Philadelphia, Pa.; David Armitage Bannerman, London, England; Dr. Valentine Bianchi, St. Petersburg, Russia; Dr. Roberto Dabbene, Buenos Aires, Argentina; Alwyn Karl Haagner, Pretoria, South Africa; Robert Hall, Rest Harrow, Hobart, Tasmania; Dr. Einar Lönnberg, Stockholm, Sweden; Dr. Percy R. Lowe, The Hatch, Windsor, England; Dr. Auguste Ménégaux, Paris, France; and Harry Forbes Witherby, of Hampstead, England; were elected Corresponding Fellows. F. Seymour Hersey, Taunton, Mass.; A. Brazier Howell, Covina, Cal.; and J. Eugene Law, of Hollywood, Cal.; were elected to the class of Members, and the following one hundred and seventy persons were elected Associates:

Charles Pons Aimar, M.D., Charleston, S. C.
 Mrs. Amelia S. Allen, Berkeley, Calif.
 Stanley Clisby Arthur, New Orleans, La.
 Mrs. Clarence A. Aspinwall, Washington, D. C.
 Harold Lester Babcock, M.D., Dedham, Mass.
 Dr. Wm. Frederic Badé, Berkeley, Calif.
 Aaron C. Bagg, Holyoke, Mass.
 Egbert Bagg, Jr., Utica, N. Y.
 S. Prentiss Baldwin, Gates' Mill, Ohio.
 Clifford Mann Balkam, Colorado Springs, Colo.
 Ira Barrows, Sea Bright, N. J.
 Marion William Batchelor, Kansas City, Mo.
 James F. Beal, Ann Arbor, Mich.
 Benjamin Franklin Bemis, Gleasondale, Mass.
 A. J. Blake, Corvallis, Oregon.

Mrs. Emma T. Bodine, Crawfordsville, Ind.
 Dan H. Bowman, Mizpah, Mont.
 Howarth Stanley Boyle, New York City.
 Joseph S. Briggs, Norristown, Pa.
 Charles D. Bunker, Lawrence, Kas.
 E. Ray Burton, Delaware, Ohio.
 Chalmers S. Brumbaugh, Baltimore, Md.
 Prof. Walter Guyton Cady, Middletown, Conn.
 Henry A. Caesar, New York City.
 Chas. L. Camp, Berkeley, Calif.
 George G. Cantwell, Puyallup, Wash.
 Hall Bryant Carpenter, Somerville, Mass.
 Eugene S. Catron, Portland, Oregon.
 Omar P. Chase, Andover, Mass.
 Mrs. Arthur E. Clarke, Manchester, N. H.
 Miss Mary S. Clarke, Bristow, Va.
 George J. Cooke, Ambler, Pa.
 Julian Dana Corrington, Ithaca, N. Y.
 Clifford Cronk, Monterey, Mass.
 Haskell Brooks Curry, Boston, Mass.
 William Shepard Dana, Mastic, Long Island, N. Y.
 Stuart T. Danforth, East Jaffrey, N. H.
 Chas. E. Dankers, Corning, Mo.
 Harold K. Decker, West New Brighton, N. Y.
 William M. Derby, Jr., Chicago, Ill.
 Homer R. Dill, Iowa City, Iowa.
 Joseph Scattergood Dixon, Berkeley, Calif.
 Miss Helen Dwise, Washington, D. C.
 Wm. L. G. Edson, Rochester, N. Y.
 William Otto Emerson, Hayward, Calif.
 Evan M. Evans, New York, N. Y.
 Arthur Farquhar, York, Pa.
 Allan Hart Faxon, Southbridge, Mass.
 Dudley B. Fay, Boston, Mass.
 Mrs. E. S. Finney, St. Davids, Pa.
 Thomas M. Fitzpatrick, Brookline, Mass.
 Edward Fleischer, Brooklyn, N. Y.
 Charles Benton Floyd, Auburndale, Mass.
 Mrs. Annie Middaugh Folger, Devils Lake, No. Dak.
 Nathan Chandler Foot, M.D., Hyde Park P. O., Mass.
 Frank B. Foster, Haverford, Pa.
 Henry J. Fry, Germantown, Pa.
 Walter Fry, Three Rivers, Calif.
 Henry C. Fuller, Washington, D. C.
 Dr. Julius Garst, Worcester, Mass.
 Edward N. Goding, Boston, Mass.

Walter A. Goelet, Ravinia, Ill.
Luther J. Goldman, Berkeley, Calif.
Charles Crawford Gorst, Cambridge, Mass.
Alfred M. Gould, Malden, Mass.
Mrs. Adele Lewis Grant, Columbia, Calif.
George M. Gray, Woods Hole, Mass.
Mrs. Anna K. Grow, Lebanon, N. H.
Charles Overton Handley, Lewisburg, W. Va.
John L. Harvey, Waltham, Mass.
Richard E. Harrison, New Haven, Conn.
Miss Sadia Haskell, Washington, D. C.
Dr. Royal Hatch, Wellesley, Mass.
Theodore L. Hermann, West New Brighton, N. Y.
Mrs. Eleanor Hitchcock, Waterbury, Conn.
Oliver W. Holton, Ithaca, N. Y.
Charles B. Horton, Pittsburgh, Pa.
Isaac Chester Horton, Canton, Mass.
Irving R. Hough, Meriden, Conn.
Clarence Anebresen Hubbard, Portland, Oregon.
Prof. Marian E. Hubbard, Wellesley, Mass.
Ralph Hubbard, Ithaca, N. Y.
Prof. James Franklin Illingsworth, Honolulu, H. I.
Edwin Leroy Jack, Portland, Maine.
Alphonse Jay, Los Angeles, Calif.
Dr. Harris Kennedy, Readville, Mass.
Frederick S. Kingsbury, Needham, Mass.
Louisa W. Lasell, Cliftondale, Mass.
Roy A. Latham, Orient, L. I., N. Y.
Mrs. Lawrence Lee, Albuquerque, New Mexico.
Claude Willard Leister, Ithaca, N. Y.
Aldo Leopold, Albuquerque, New Mexico.
Nathan Leopold, Jr., Chicago, Ill.
Hoyes Lloyd, Toronto, Ontario, Canada.
Thomas Henry Lord, Mattapoisett, Mass.
Henry Joseph Lund, San Jose, Calif.
Mrs. A. B. McMillen, Albuquerque, New Mexico.
Douglas C. Mabbott, Washington, D. C.
Miss Hazel MacDonald, Kersey, Colo.
Alfred Marshall, Chicago, Ill.
Miss Janet Martin, Milford, Conn.
John B. May, M.D., Cohasset, Mass.
Mrs. Edith Clark Maynard, Northampton, Mass.
Miss M. Mead, Winnetka, Ill.
Mrs. Elisabeth C. T. Miller, Cleveland, Ohio.
Enos A. Mills, Estes Park, Colo.
Mason Mitchell, Apia, Samoa.

Harry Lee Moody, Lake Wilson, Minn.
 Raymond Wheatley Moore, Kensington, Md.
 Walter C. Newberry, Winnemucca, Nev.
 Miss Elizabeth Nichols, Providence, R. I.
 Miss Eleanor G. Noble, Cambridge, Mass.
 Edward Norris, Philadelphia, Pa.
 Robert R. Ozmer, Decatur, Ga.
 R. H. Palmer, Pocatello, Idaho.
 Edward Ludlow Parker, Concord, Mass.
 Mrs. Frederic H. Pattee, Evanston, Ill.
 Earl L. Poole, Reading, Pa.
 W. F. Provo, Wickliffe, Ohio.
 Nelson D. W. Pumyea, Mt. Holly, N. J.
 Milton Smith Ray, San Francisco, Calif.
 H. Severn Regar, Norristown, Pa.
 Alex. Reed, Washington, Pa.
 Mrs. Victor M. Reichenberger, New York City.
 Robert Riddle, Philadelphia, Pa.
 S. Earl Riddle, Chester, Pa.
 Harry Rief, Seattle, Wash.
 Mrs. John R. Rogers, Brooklyn, N. Y.
 Oscar Frederick Schaefer, Flagstaff, Ariz.
 Julius Jacob Schneider, Anaheim, Calif.
 Samuel Scoville, Jr., Haverford, Pa.
 H. A. Scullen, Ames, Iowa.
 William R. Sears, Boston, Mass.
 William J. Serrill, Haverford, Pa.
 Henry S. Shaw, Jr., Dover, Mass.
 Harley B. Sherman, Ann Arbor, Mich.
 G. L. Shirley, Dayton, Va.
 Thomas Silsbee, Boston, Mass.
 James Silver, Washington, D. C.
 M. P. Skinner, Yellowstone Nat. Park, Wyoming.
 Lester W. Smith, Meriden, Conn.
 Mrs. Wallis Craig Smith, Saginaw, Mich.
 Richard P. Stapleton, Holyoke, Mass.
 Tracy Irwin Storer, Berkeley, Calif.
 Mrs. Herman F. Straw, Manchester, N. H.
 Mrs. A. B. Stroup, Albuquerque, New Mexico.
 J. A. Sweeney, Halsey, Neb.
 Samuel A. Tatnall, Philadelphia, Pa.
 August F. Taylor, Fowler, Colo.
 Dr. Walter P. Taylor, Washington, D. C.
 Warner Taylor, Madison, Wisc.
 Frank Milton Ruthven Thackaberry, Tampico, Ill.
 J. Walcott Thompson, Salt Lake City, Utah.

Miss Julia A. Thorns, Asheboro, N. C.
Robie Wilfrid Tufts, Wolfville, Nova Scotia.
Mrs. David C. Twichell, Albuquerque, New Mexico.
Henry Lorenz Viereck, Washington, D. C.
Mrs. William R. Walton, Albuquerque, New Mexico.
Dr. Geo. A. Webster, Boston, Mass.
T. Walter Weiseman, Emsworth, Pa.
Charles Spangler Weiser, York, Pa.
Dr. Otto Westerfeldt, San Francisco, Calif.
Mrs. India Taylor Whaler, Princeton, N. J.
Mrs. James W. Wheeler, Tucson, Ariz.
Charles Livy Whittle, Cambridge, Mass.
William Henry Wiegmann, M.D., New York City.
Nelson E. Wilmot, West Haven, Conn.
Miss Elizabeth M. Winch, Canton, Mass.
Mrs. Henry Martyn Witter, Worcester, Mass.
George B. Wood, M.D., Philadelphia, Pa.

A committee of five from the membership of the Union will soon be appointed to obtain contributions to a permanent endowment fund for research and publication in ornithology.

PUBLIC SESSIONS. *First Day.* The meeting was called to order by the President, Dr. Fisher. An address of welcome was made by Dr. Samuel G. Dixon, on behalf of the Academy of Natural Sciences.

The papers of the morning session were as follows:

'In Memoriam — Daniel Giraud Elliot,' by Dr. Frank M. Chapman.

'In Memoriam — Wells Woodbridge Cooke,' by Dr. T. S. Palmer.

'A New Name for an Old Friend,' by Harry C. Oberholser. Read by Dr. Palmer in the absence of the author.

'The Life and Writings of Professor F. E. L. Beal,' by W. L. McAtee.

'Bird Migration in Central Africa,' by James P. Chapin, Illustrated by lantern slides.

'Bird Casualties,' by Mrs. E. O. Marshall.

A letter was read by Prof. Paul Bartsch in relation to a memorial fountain to Prof. Wells W. Cooke which it is proposed to erect in the grounds of the Smithsonian Institution, Washington, D. C.

The first paper of the afternoon was:

'Meadowlark Duets,' by Henry Oldys. Illustrated by whistled songs of meadowlarks.

Next came 'An Ornithological Reconnaissance in South America,' by Dr. Frank M. Chapman.

The remaining papers, both illustrated by lantern slides, were:

'Photographing Gulls at the Panama-Pacific Exposition,' by Joseph Mailliard.

'Concerning Bird Banding,' by Howard H. Cleaves.

In the evening members of the A. O. U., and the Delaware Valley Ornithological Club, with their friends, met at dinner at "The Roosevelt," 2027 Chestnut St., Philadelphia — one hundred and forty-four persons being present. An unique feature, immediately following the dinner, was the display, on a screen, of pictures depicting prominent ornithologists from the juvenal to adult plumage!

Second Day. The meeting was called to order by the President.

The papers of the morning session were:

'Woodcraft and Sparrow-proof Bird Boxes,' by Ernest Thompson Seton.

'What Determines the Length of Incubation,' by Dr. W. H. Bergtold.

'A Review of the Diving Petrels (Pelecanoididæ),' by Robert Cushman Murphy and Francis Harper. Presented by Mr. Murphy.

'Two Birds from the Gulf of California,' by Dr. Paul Bartsch. Illustrated by lantern slides.

'Exhibition of Hybrid Ducks with Comments,' by Louis Agassiz Fuertes. Remarks followed by Messrs. Deane and Murphy, Drs. Stone, Bergtold, Bishop, and Bartsch, and the author.

'Attempts to record with the camera the food of some native birds,' by Edward Howe Forbush. Illustrated by lantern slides.

'The Nesting of the Cock of the Rock,' by Leo E. Miller.

'Field notes on *Chunga burmeisteri*,' by Howarth S. Boyle.

The following papers were presented at the afternoon session, Vice President Stone in the chair, all but one being illustrated by motion pictures:

'The Home Life of our Common Birds,' by Herbert K. Job.

'Bird Reservations of the Gulf Coast,' by Herbert K. Job.

'Some problems with every day Birds,' by Dr. Arthur A. Allen. Illustrated by lantern slides.

'Gannets of Bonaventure Island, Gulf of St. Lawrence,' by Percy A. Taverner. Presented by Dr. Frank M. Chapman.

'Wild Geese at Jack Miner's place, Kingville, Ont.,' by Percy A. Taverner. Presented by Edward Howe Forbush.

'Home Life of Various Minnesota Birds,' by Dr. Thos. S. Roberts.

In the evening the visiting members of the Union attended a reception and smoker in the Ornithological rooms of the Academy.

Third Day. The meeting was called to order by the President.

The papers of the morning were:

'Bird Study and Life,' by W. Leon Dawson.

'Geographical Distribution of Color in the Genus *Junco* and its significance as a Test of Species,' by Dr. Jonathan Dwight.

'The Shedding of Stomach Lining by Birds, particularly as Exemplified by the Anatidæ,' by W. L. McAtee. Illustrated by lantern slides.

'Some Relationships of the North American Passeres,' by Dr. Spencer Trotter. Illustrated by lantern slides.

At the afternoon session, Vice-President Stone in the Chair, the following papers were presented:

'Personalalia in Ornithology — Report of the Committee on Biography and Bibliography,' by Dr. T. S. Palmer.

'Birds of the Athabaska and Great Slave Lake Region,' by Francis Harper. Illustrated by lantern slides.

'Our Eastern Flycatchers and their Nesting Sites,' by William L. Baily. Illustrated by lantern slides.

'Washington Coast Bird Reservations,' by Prof. Lynds Jones.

'Notes on the External Structure of Woodpeckers,' by W. DeWitt Miller. Remarks followed by the Chair.

The following papers, in the absence of the authors, were read by title:

'In Audubon's Labrador,' by Dr. Chas. W. Townsend.

'Notes on some British Guiana Birds,' by C. William Beebe.

'Notes on Long Island Birds,' by Ludlow Griscom.

'Notes on Long Island Birds,' by Robert Cushman Murphy, and John Treadwell Nichols.

'Bird Day in the Querigua Forest, Guatemala,' by Samuel N. Rhoads.

Resolutions were adopted thanking the Academy of Natural Sciences for the use of the hall for a place of meeting for the Union, and for other courtesies extended; to the Local Committee and other Philadelphia ornithologists for the cordial welcome and most generous hospitality shown visiting members and friends of the Union during its Thirty-fourth Stated Meeting, and to the Zoölogical Society of Philadelphia for its kind invitation to visit the Gardens of the Society.

After the adoption of the resolutions the President, Dr. Fisher, spoke of the attention paid the visiting members of the Union by the local ornithologists, and voiced the sentiment of all that the sessions just closing were the most interesting and enjoyable since the foundation of the Union.

On Friday, November 17, after adjournment of the Union, Dr. Spencer Trotter conducted a party to "Mill Grove," on the Perkiomen, the former home of Audubon and to "Fatland Ford" the former home of Mrs. Audubon. The same day Messrs. J. Fletcher Street and Samuel Scoville, Jr., acted as guides for a party visiting the Pine Barrens of New Jersey. On Saturday, November 18, several members of the Union went to the grave of Alexander Wilson in the Old Swedes Church Yard on Water Street, Philadelphia and the Bonaparte house where the ornithologist once resided was also visited.

The registered attendance of members at the Stated Meeting just closed was larger than ever before, and the number of new members elected will please every one interested in the continued success of the Union.

The next meeting of the Union will be held in Cambridge, Mass. in 1917, the date to be determined by the local committee.

JOHN H. SAGE,
Secretary.

GENERAL NOTES.

The Roseate Tern (*Sterna dougalli*) on Lake Michigan.—On August 14, 1916, while watching the large number of terns congregated on the extreme southern end of Lake Michigan near Millers, Ind., an individual was noticed standing alone at the water's edge, which on being examined with field glasses, looked different from either the Forster's or the Common Tern, both of which were there in abundance. The specimen was collected, and proved to be an adult male Roseate Tern, in full breeding plumage. While the beautiful rosy tint on the breast was evident enough with the specimen in hand, it was not noticed while watching the bird on the beach. While this appears to be the first Lake Michigan record, it is not unlikely that careful watching would show an occasional wanderer of this species among the large number of terns that frequent this locality in fall. The skin is in the Harris Extension collection.—H. L. STODDARD, N. W. Harris Public School Extension of Field Museum, Chicago, Ill.

Relationship of Florida Herons.—I note in the October number of 'The Auk' which has just come to hand, on page 431 the statement that *Ardea herodias wardi* and *Ardea herodias wurdemanni* are both to be considered phases of *Ardea herodias occidentalis*.

My experience with the birds on the Florida Keys for the last five years leads me to believe that this dictum should not be adopted.

The Great White Heron of the Keys is so entirely different in its habits and psychological manifestation from the Great Blue Heron which occupies the same region that no one who knows the two birds in the field would believe that they were the same. The Great White Heron is of more social habits than the Blue Heron. You frequently see small groups of this species in a confined space. For example: on Duck Key, a small island less than sixty yards across, I found four of the Great White Herons. Then again there is a breeding colony on a small island in the lagoon on Chase's Key, which is used as a breeding ground exclusively by the Great White Heron.

The Great Blue Heron is more sparingly represented, and lacks the social habits of the white bird; that is, when not on its breeding ground.

I think that Mr. Oberholser's dictum is the correct one, and we should reserve the name *Ardea occidentalis* for the Great White Heron of the Florida Keys, and *Ardea herodias wardi* for the Great Blue Heron of that region.—PAUL BARTSCH, U. S. National Museum, Washington, D. C.

A New Record for New England.—This museum has obtained a specimen of the Mountain Plover (*Podasocys montanus* (Towns.)) taken at Chatham, Mass. It is an immature male and was shot on October 28 by Mr. A. E. Crowell. This bird was associated with some Black-breasted Plovers at the time.—W. SPRAGUE BROOKS, Boston Society of Natural History.

Destruction of Passenger Pigeons in Arkansas.— My friend, Mr. C. A. Willett of Hammond, La., sends me an interesting account of the destruction of Passenger Pigeons by a forest fire. Some years ago he was accustomed to board with Mr. and Mrs. Robert Booth of Garner, Arkansas. Mr. Booth was a great hunter and knew the country well. "Many a time," writes Mr. Willett, "he told me of the Wild Pigeons and how they filled the woods and he always insisted very positively that they all burned up. Mr. Booth died a few years ago but Mrs. Booth is still living. His story was as follows:

"Near Hickory Plains, Arkansas, some eight miles east of Beebe, White County, Ark., there was in the early days, a large pigeon roost. The timber, where the roost was, was all broken down from the weight of the birds that used it; the ground covered with litter, limbs, dry grass, dead trees, brush, etc. You can imagine what a hot fire such a place must have made. The weight of the birds was such that large trees had the branches stripped off them, and only the trunk was left standing, others were all split in pieces. All the big timber in this roost had been broken down. When hunters wanted pigeons in that section, they were in the habit of going to the roost at night and with guns, clubs, and poles, knocked down all they wanted.

"On this fatal night a party of hunters accidentally set fire to the woods, burning out the roost with all the pigeons. There was so much litter upon the ground that the fire burned an entire week. Pigeons would begin to come to the roost along about two o'clock in the afternoon, and keep it up until dark. They poured into that fire by the hundreds, keeping it up all week while that roost was burning. The ground was alive with naked pigeons that had the feathers singed off them, but which eventually died and ever since that fire there have been no more wild pigeons in Arkansas, so Mr. Booth positively insisted, and he was a hunter who was in the woods all the time, and when he was eighty years old, still had perfect eyesight and could read a paper without glasses.

"Now, I asked Mrs. Booth the last time I saw her, when this fire occurred. She said that they moved onto their farm in 1877, and as it now seems to her, they must have lived on it, before the roost burned, something like a year or two. This, as she figured it, would put the fire around the year 1879, but she is not positive as to this date.

"I think these facts should be investigated—the time this roost burned, for burn it did, the extent of the roost, and the date of the fire, all of which can no doubt be ascertained pretty accurately if some of the old settlers are still alive and no doubt some are."

This account seems worthy of publication and investigation by those who are in a position to secure more details of the catastrophe.—PAUL BARTSCH, *U. S. National Museum, Washington, D. C.*

American Goshawks in Kansas.— Eastern Kansas is being honored this fall by a visit from a flight of these beautiful hawks. The only other

occurrence in the State according to the records in the museum of the University of Kansas was a single specimen taken in Riley Co., February, 1878, by W. F. Allen. From October 27 of this year to the present date, November 20, the Museum has obtained nine specimens, three females and six males. I have reports of several that were killed and thrown away, and several live specimens were seen by a party from the museum.

The farmers report that they are killing their full grown chickens, but the contents of the stomachs of those received at the museum contained only rabbit.—C. D. BUNKER, *Museum of the University of Kansas, Lawrence, Kansas.*

Arctic Three-toed Woodpecker (*Picoides arcticus*) in Jefferson Co.,

N. Y.—While hunting Grouse and Woodcock near the village of Adams Center, Jefferson Co., N. Y., on October 20, 1916, I collected a female Arctic Three-toed Woodpecker. I was at once attracted by the call-note which was one I had not heard before. This bird is my first record of the species during the four or five years I have been observing the birds of Adams and the neighboring towns.—EDMUND J. SAWYER, *Watertown, N. Y.*

The Earliest Name for the Nighthawk.—*Caprimulgus virginianus* Gmelin (Syst. Nat., I, ii, 1789, 1028) is the long-established basis for our Nighthawk, the sources quoted by this author being Linnæus, Kalm, Brisson, Catesby, Edwards, Buffon, Pennant and Latham. The accounts of nearly all these writers, except Kalm (who made independent observations in New Jersey) are easily traced back to Catesby or Edwards. Catesby (Nat. Hist. Carolina, II, 1743, Appendix, 16, pl. 16) described and figured a bird from Virginia, which is unquestionably the Nighthawk, but the habits ascribed to it are those of the Whip-poor-will. Edwards (Nat. Hist. Birds, II, 1747, 63, pl. 63) gave a much better description and figure of probably the same individual, with which "Mr. Mark Catesby obliged" him. Both Catesby and Edwards introduced rictal bristles in their figures, probably because the only species then known possessed them, and the characters of the genus *Caprimulgus* required them as one of the features to distinguish it from *Hirundo*. Edwards, however, made no mention of rictal bristles in the minute description furnished by him.

So much for the basis of Gmelin's *Caprimulgus virginianus*, supposedly the earliest name for the Nighthawk. Some years before Gmelin, however, J. R. Forster published his 'Catalogue of the Animals of North America.' This was issued in 1771, and is of little importance at this date, but it contains two or three new names for birds, one of them being *Capr[imulgus] minor*, p. 13, based on "C. III. 16.," meaning Catesby (as Forster explains on p. 5), Appendix, p. 16. As this Catesby reference is the chief basis of Gmelin's name, it follows that *Caprimulgus minor* Forster is of equal pertinency, and our Nighthawk should be known as *Chordeiles minor minor*, while the subspecies from the Greater Antilles, now called

Chordeiles virginianus minor Cabanis, will become *C. v. gundlachii* Lawrence.—CHAS. W. RICHMOND, Washington, D. C.

A New Name for *Onychospiza* Prjevalski.—*Onychospiza* Prjevalski (Mongol. i Strana Tangut., II, 1876, 81), based on *O. taczanowskii* of the same author, has been generally lumped with *Montifringilla* Brehm, 1828, and the species name has been synonymized with *M. mandelli* Hume. Recently, however, Bianchi (Annuaire Mus. Zool. Acad. Imp. St.-Pétersb., XII, 1907 (1908), 555) has recognized *Onychospiza* as a distinct genus, and in his paper (on the forms of the genera *Montifringilla*, *Pyrgilauda* and *Onychospiza*) has, I believe, pointed out the priority of *O. taczanowskii* (summer of 1876) over *M. mandelli* (Hume, Stray Feathers, IV, Dec., 1876, 488). The recognition of *Onychospiza* recalls the action of Rey (Synon. Eur. Brutvögel und Gäste, 1872, 216), who altered *Onychospiza* Bonaparte, 1853, to *Onychospiza*, effectually preoccupying the use of the same term in another sense. I therefore suggest *Onychostruthus* as a substitute for *Onychospiza* Prjevalski, with *Onychospiza taczanowskii* as the type.—CHAS. W. RICHMOND, Washington, D. C.

The Migrant Shrike near Boston.—On September 4, 1916, I saw a Migrant Shrike (*Lanius ludovicianus migrans*) in Brookline, Mass., near the West Roxbury (Boston) line. The bird was in an open pasture, and I followed it about for some time, saw it at close range, and positively identified it. It was very active, flying about from boulder to fence-post and swooping to the ground after insects, probably grasshoppers. Mr. Brewster, in 'Birds of the Cambridge Region' (1906) cites but four records for the species within ten miles of Boston, and I find no later records in 'The Auk.'—FRANCIS H. ALLEN, West Roxbury, Mass.

Philadelphia Vireo (*Vireosylva philadelphica*) in Massachusetts in Autumn.—On September 17, 1916, I shot a young female Philadelphia Vireo in Harvard, Mass. The specimen is now in my collection (No. 682). By a curious coincidence the bird was shot less than 500 yards from the spot where I took one about a year previous (Auk, XXXIII, p. 78).—JAMES L. PETERS, Harvard, Mass.

Wilson's Warbler (*Wilsonia pusilla pusilla*) in Massachusetts in December.—On December 3, sunny, light northwest wind, mercury about forty, I discovered a male Wilson's Warbler in the Arnold Arboretum, Boston. The bird was in a berry-bearing bush, barberry I think, but did not seem to be feeding on the berries but about the branches and twigs. He was in full color, very brilliant — of course seeming more so in the gray world of December, and appeared to be in the best of health and spirits. In the same bush was a White-throated Sparrow and across the drive, the Mockingbird which has lived there for some years. While I was watching

the warbler I was joined by two other parties of bird-students who offered to bear witness, as we all had an excellent view of the bird.— MRS. GEORGE H. MELLEN, *Newton Highlands, Mass.*

A Remarkable Case of Bird-feeding.— This year, 1916, the House Wrens appeared on April 30, and presently a pair of them took possession of a bird box nailed to a disused poultry house at the rear of the lot. May 27, there was one egg in the nest. June 3, there were seven eggs, neatly concealed by feathers fastened upright in the rim of the nest and curving inward. June 14, there were four young, looking like wine-colored grub-worms, and three eggs. Later all the eggs hatched. June 23, when the older ones were nine days old, the parents fed them 34 times between 6.30 and 7.30 A. M. and at least half the hour was spent in trying to drive away six or eight English Sparrows that hung over the edge of the poultry house peering down at the nest, alighting on the lid and ledge of it, and manifesting the most excessive and persistent curiosity concerning the young which were keeping up a constant clamoring for food.

At first while the nest was being built and before the young were hatched, the parents made little fuss when another bird or a person approached, bestowing most of their scolding upon two cats that prowled around. But their anxiety grew with the development of their young and they protested more and more at every disturbance, both of them nipping the sparrows and following me and the cats with their angry chatter.

On June 24, the parents fed 21 times between 6.30 and 7 A. M. and again spent much of the time in fighting the sparrows which were even more impudent than before, peering into the opening of the box and remaining stubbornly upon the ledge in spite of the peckings they received.

On the afternoon of June 25, the young were fed 86 times between 4.40 and 5.40, and I discovered that the feeding was now done by one bird, the male, who no longer had time either to scold or to sing. Only five times in the hour did he utter a brief twitter, and from the twenty-fifth to the seventieth trip the feeding was incessant. He had discovered a rich feeding ground close by and neither sparrows nor cats interrupted him. Moreover, he did his best to keep the nest clean; but this, as we afterward ascertained was too much for him. He had to neglect his housekeeping to fill the seven hungry mouths.

That evening and the next day, by going near, we made sure that the female bird was missing, probably caught by the cats. But the work of the male so far surpassed that of other birds we had been watching that the matter was reported to Mr. Sperry, Assistant in the Nature Study Department of the Western Illinois Normal, and on June 28, the last day the birds would be in the nest, he and members of his class watched by turns. He himself came at 3.45 A. M. to begin the tally on a large sheet spaced for each hour and each hour space divided into quarters. A clock stood beside the watchers.

At 4.15 the Wren came out of a small elm where he had spent the night

and began his last day of service which must have been an arduous one after his previous three days of unaided toil. The record for the first hour ending at 5.15 was 85. In the last quarter before 8 P. M. there were but four trips with food. Toward the close of the day the young sometimes came out of the box in their eagerness to get their morsel. This is the tally by hour for the fifteen hours and forty-five minutes: 85, 99, 88, 79, 93, 111, 78, 70, 98, 74, 56, 59, 44, 72, 80, 31,—a total of 1217 for one bird. This must be a world record. Nowhere can we find more than 750 feedings accredited to both parent wrens working together.

Early one morning during the incubation, I tallied the male wren's twitters, and this is the record per minute: 9, 7, 9, 9, 8, 2,—7, 6,—10, 5, 8, 2,—8, 7, 7,—10, 10, 7,—6. Sometimes the pause was for the fraction of a minute; sometimes longer for flight.—CLARA KERN BAYLISS, *Macomb, Ill.*

A Mockingbird in New Hampshire.—A Mockingbird (*Mimus polyglottos*) appeared near my home on the outskirts of Manchester, N. H., November 5, 1916, apparently accompanying a flock of Robins; and stayed in the neighborhood two days. It was seen by Mr. Lewis Dexter, and by a number of other bird lovers whom I was able to notify. It did not act like an escaped cage bird, as it did not care to have me approach closer than thirty or forty feet, although we could not rule out the possibility.

I have not seen a caged Mockingbird in this region for years.

Allen's 'List of the Birds of New Hampshire' mentions one record for New Hampshire and that is the only one I have been able to find.—WILLIAM R. VARICK, *Manchester, N. H.*

Acadian Chickadee at Rhinebeck, N. Y.—On November 6, 1916, I observed an Acadian Chickadee (*Penthestes hudsonicus littoralis*) for several minutes feeding within seven feet of me among dead aster-tops. It was accompanied by several Black-capped Chickadees, but appeared tamer and entirely at ease.

This is the first visit from the species since the winter of 1913-14, when several were observed in Dutchess County. The earliest noted in 1913 appeared on November 27 and, so far as I know, this year's visitor establishes an early record for this latitude, barely ninety miles north of New York City.—MAUNSELL S. CROSBY, *Rhinebeck, N. Y.*

The Acadian Chickadee on Long Island.—On November 13, 1916, an Acadian Chickadee (*Penthestes hudsonicus littoralis*) was seen at Hewlett, Long Island. I do not report the occurrence on my own personal observation but on that of my daughter, thirteen years of age, who did not know the bird; nevertheless I make myself responsible for the record which, as will be seen, is quite free from the possibility of error. It rests primarily on the account of a competent observer who is alive to the moral necessity of accuracy in bird matters and apprehends perfectly the impassable difference between *might be* and *is* in the determination of a bird's identity.

The Acadian Chickadee was in the shrubbery bordering Willow Pond in Hewlett Park associating, but not intimately, with Black-capped Chickadees and Kinglets and finally descending alone to bathe at the shore of the lake. Watching it the observer suddenly became mystified and excited — it was not a Black-capped Chickadee! What then could it be? The momentary impression was of a "Chickadee with something missing, like a person lacking an arm or a leg." What was wanting was quickly discovered to be the black cap, the top of the head being dull brown, scarcely darker in shade than the brownish back, and at strong contrast with the black throat; the wings were darker than those of the Black-capped Chickadee, and the sides below the wings were dark chestnut brown even deeper in color than the underparts of a Red-breasted Nuthatch. All this, related to me, left nothing to be asked for in the way of description. But there was further confirmation. The bird's notes were not at all those of the Black-capped Chickadee, and a description and imitation of them were quite realistic, enough to send my memory back to the first and only Acadian Chickadee that I had ever met with. This was near Lake Terror in the Adirondacks in company with Dr. C. Hart Merriam, October 31, 1882, when the very distinctive notes of the bird were what alone drew attention to it. The specimen is still in my collection and was instantly recognized by my daughter as being nearly identical with the bird she had so carefully studied in life the same afternoon.

The species has not before been reported from Long Island or the vicinity of New York, nor from further south, I think, than Poughkeepsie on the Hudson (Bird-Lore, XVI: 448-449, Maunsell S. Crosby).

It seems well to give early announcement of this occurrence that other observers near New York may be put on watch. The early date of the bird's appearance seems to hint that the species may be repeating the southward migration that has excited so much attention in recent winters, and that the movement is progressive and has this year reached a more southern point than at any time before.—EUGENE P. BICKNELL, *New York City*.

Alaska Hermit Thrush in Northeastern Illinois.—While hunting for Crossbills in the pine barrens at Beach, Lake County, Illinois, November 5, 1916, I secured a specimen of *Hylocichla guttata guttata*, which was in a juniper along Dead River. It proved to be an adult male, and measured before skinning, length 5.75 in., extent 10 in., wing 3.62 in., tail 2.75 in., culmen .40 in. (Coll. H. K. C. No. 20455).

I have recently compared this bird with specimens from the West Coast in the collections of Dr. Dwight and the U. S. National Museum, and find them to be identical. Dr. Dwight and Mr. Oberholser have also kindly identified the specimen for me.—HENRY K. COALE, *Highland Park, Illinois*.

Winter Birds at Newton Highlands, Massachusetts.—We are enjoying a remarkable flight of winter birds seldom seen here. Already

(December 4, 1916) Siskin's (*Spinus pinus*), Acadian Chickadees (*Parus hudsonicus littoralis*), Redpolls (*Acanthis linaria linaria*) American and white-winged Crossbills (*Loxia curvirostra minor* and *L. leucoptera*), Pine Grosbeaks (*Pinicola enucleator leucura*), Evening Grosbeaks (*Hesperiphona vespertina vespertina*), Snow Buntings (*Plectrophenax nivalis nivalis*), Snowy Owl (*Nyctea nyctea*), and Rough-legged Hawks (*Archibuteo lagopus sancti-johannis*) are here, many of them in much greater abundance than for many years.—MRS. GEORGE H. MELLE, *Newton Highlands, Mass.*

Evening Grosbeak (*Coccothraustes vespertina vespertina*) **at Cinnaminson, N. J.**—On December 3, 1916, Mr. Charles Evans of Cinnaminson, near Riverton, N. J., found two Evening Grosbeaks feeding on his lawn. He recognized them at once by a colored plate of the species which he had, but supplemented this identification with a direct comparison with the description in Chapman's 'Handbook.' The birds were exceedingly tame and would scarcely get out of his way. Cinnaminson is only eight miles above Philadelphia on the opposite side of the Delaware River and this constitutes the first record of the species south of Plainfield, Fair Haven and Princeton from which places it is recorded in 'Bird-Lore,' for 1911 and 1913. The Cinnaminson birds are therefore the most southern recorded occurrence for this interesting species.—GEORGE SPENCER MORRIS, *Olney, Philadelphia, Pa.*

Clarence Henry Morrell — A Correction.—In the 'Ten Year Index to the Auk,' p. XIX, 1915, the birth place of Clarence Henry Morrell is given as Pittsfield, Me., and the date of birth as Feb. 23, 1872. These data were obtained from an obituary notice by Mr. J. M. Swain in 'The Auk' for 1902, p. 423. My attention was recently called to a more extended biographical sketch of Mr. Morrell in the 'Journal of the Maine Ornithological Society,' V, pp. 7-12, 1903, also prepared by Mr. Swain, stating that Mr. Morrell was born at River Hobart, Nova Scotia, Feb. 27, 1872. This statement Mr. Swain advises me is correct and the place and date originally published in 'The Auk' are erroneous.—T. S. PALMER, *Washington, D. C.*

RECENT LITERATURE.

Index to 'The Ibis' 1895-1912.¹— This bulky volume is the third 'Index-volume' of 'The Ibis,' the others covering respectively the years 1859-1876, and 1877-1894. Unlike the custom adopted by 'The Auk,' 'The Ibis' issues a separate 'Subject Index' at the end of every series (six volumes) so that no entries of authors or subjects appear in the work before us. The size of the volume is greatly increased by the indexing of every species under both species and genus and of every trinomial name under subspecies, species and genus, there being no cross references whatever.

To anyone who has constant occasion to consult the files of 'The Ibis' this index is invaluable and ornithologists the world over owe a debt of gratitude to Messrs. Henry Peavot and Thomas Wells who compiled it and to Mr. W. L. Slater, the editor.— W. S.

Noble on the Resident Birds of Guadeloupe.²— Mr. Noble spent the summer and early fall of 1914 on Guadeloupe Island in the French West Indies, collecting in the interest of the Museum of Comparative Zoölogy, and the present report covers the results of his work. Forty-six species are listed accompanied by extensive notes on relationship, habits and abundance, while several introductory pages summarize the topography of the island, the vertebrate fauna and the present status of the bird life. The four species of parrots, were the earliest land birds to be exterminated, having been killed in large numbers by the natives. The Coot and Rail have apparently disappeared also, though their extirpation is to be laid to the mongoose rather than to human agency. The other extinct species is the Diablotin or Black-capped Petrel, which, according to the "oldest inhabitants" has not been seen since the great earthquake of 1847. Mr. Noble nevertheless is able to discuss the relationship of the Guadeloupe petrels at considerable length on the basis of four specimens in the Lafresnaye collection secured in Guadeloupe in 1842 by L'Herminier. These curiously enough belong to two different species, the smaller of which seems to correspond best with Kuhl's description of *Procellaria hasitata* while the larger is *P. diabolica* of Lafresnay. Mr. Noble further thinks it probable that the North American specimens of '*A. hasitata*' will be found to be *A. diabolica*.

The Laughing Gulls of the Antilles and Bahamas are found to be uniformly smaller than those from the mainland and Mr. Noble proposes to separate the latter as *Larus atricilla megalopterus* (Bruch). The Grackles

¹ Index of Genera and Species referred to, and an Index to the Plates in 'The Ibis' (Seventh, Eighth and Ninth Series), 1895-1912. Edited by William Lutley Slater, M. A. London, 1916. pp. 1-513. Price, £1 12s. 6d.

² The Resident Birds of Guadeloupe. By G. K. Noble. Bull. Mus. Comp. Zool., LX., No. 10. August, 1916. pp. 359-396.

of Guadeloupe and Martinique are found to differ so very little in size that in the absence of any other character he thinks they should be united, and *Holoquiscalus martinicensis* Ridgway become a synonym of *H. guadeloupensis* (Lawrence). Ridgway's *Cichlherminia coryi* Mr. Noble considers to be the adult of *C. herminieri*, his series of twenty-four specimens showing a gradual change from one to the other.

A study of a series of *Tiaris bicolor* from Grenada, St. Vincent and Barbados shows that they represent a distinct race which is described as *Tiaris bicolor expectata* (p. 385), Grenada.

Dr. A. H. Clark's view that the races of *Dendroica ruficapilla* from Cozumel, Curaçao and St. Andrews are not separable from the typical form is endorsed.

The same view is taken of the Antillean races of the Green Heron recently described by Oberholser and Mr. Noble regards all Green Herons from Cuba to Grenada as referable to one subspecies. *Podilymbus podiceps antillarum* is still however, regarded as a valid race.

Mr. Noble's paper is carefully prepared and is a welcome and valuable addition to the literature dealing with the West Indian avifauna.—W. S.

Cherrie on the Ornithology of the Orinoco Region.¹—This is an annotated list of some 571 species and subspecies based on collections made by the writer with the addition of such species as have been reported by Berlepsch and Hartert in their 'Birds of the Orinoco Region' (Nov. Zool. IX, 1902) and other more recent papers. The manuscript was completed some five or six years ago but on account of many complications its earlier publication was impossible. While the author has endeavored to bring it up to date, he states that it is not as complete as might be desired. Nevertheless it forms a very welcome and satisfactory review of the wonderfully rich avifauna of this region and the omissions are not noticeable.

There are keys for the determination of the genera, species and subspecies of each family, while the synonymy of each form gives the original place of publication and reference to Berlepsch and Hartert or to other publications. Valuable notes on habits and distribution are given under various species as well as critical discussion of nomenclature and relationship. Apparently only one new form is described in Mr. Cherrie's paper—*Hypolophus canadensis intermedius* (p. 277) Caicara, Venezuela.

Mr. Cherrie's paper adds one more to the faunal studies of South American birds which are beginning to appear after the bewildering preliminary descriptions of new forms, and he is to be congratulated upon a piece of important work, well done.—W. S.

Recent Papers by Rothschild and Hartert.—In the last issue of 'Novitates Zoologicae' Dr. Ernst Hartert has published a number of

¹ A Contribution to the Ornithology of the Orinoco Region. By George K. Cherrie. Science Bulletin, Mus. Brooklyn Inst., Vol. 2, No. 6. September 1, 1916. pp. 133-374.

short papers of interest to systematists. He calls attention ¹ to the distinctness of the Venezuelan form of *Rhodinocichla rosea* for which the name *vulpina* Hartlaub is available, making four races of this interesting bird. The Arabian Sea Tern, he renames ² *S. repressa* (p. 288), type from Fao, Persian Gulf; the name *albigena*, by which it has been known, proving to be untenable. The record of *Arenaria melanocephala* for India based upon a specimen in the Philadelphia Academy received from Capt. Boys, is challenged ³ by Dr. Hartert as there is no definite proof that it came from India. This point seems to be well taken and the range in the A. O. U. Check-List should be revised accordingly. A study of the European Cormorant ⁴ results in the differentiation of two races—a larger, northern one, *Phalacrocorax carbo carbo* (L.), nesting on rocks, and a smaller, more southern one, *P. c. subcormoranus* (Brehm), nesting mainly on trees. Another paper ⁵ records a number of errors of synonymy and reference in Vol. XXV of the 'British Museum Catalogue.'

In conjunction with Lord Rothschild there is a review of some forms of *Coracina* (*Graucalus* Auct.) from the Solomon Islands.⁶ *C. welchmani kulambangrae* (p. 289), Kulambangra, and *C. papuensis perpallida* (p. 290), Bougainville, are described as new. A new *Monarcha*, from Rossel Island is also described,⁷ *M. cinerascens rosselianus* (p. 297).—W. S.

Mearns on *Pardaliparus elegans*.⁸—This carefully prepared paper adds another to the long series of similar reviews that have resulted from Dr. Mearns' studies of the extensive collections made by him in Africa and the Philippines. His untimely death shortly after the appearance of the present paper, has prevented his personal preparation of the comprehensive report to which these were but preliminary, a loss to science which will ever be deplored. It is to be hoped however, that some one else may complete this work as a fitting memorial to Dr. Mearns.

Seven races of *Pardaliparus elegans* are here differentiated of which *P. e. panayensis* (p. 57), Panay Isl., Philippines; *P. e. guimarasensis* (p. 58), Guimaras Isl., and *P. e. suluensis* (p. 59), Sulu Isl., are described as new.—W. S.

¹ On the Forms of *Rhodinocichla rosea*. By Ernst Hartert. *Novitates Zoologicæ*, Vol. XXIII, p. 229. September, 1916.

² What is the Correct Name of the Arabian Sea Tern. By Ernst Hartert. *Ibid.* p. 288.

³ The Alleged Occurrence of *Arenaria melanocephala* (Vig.) in India. By Ernst Hartert. *Ibid.*, pp. 291-292.

⁴ On the European Forms of *Phalacrocorax carbo*. By Ernst Hartert. *Ibid.* pp. 293-295.

⁵ More Erroneous Quotations and Other Errors. By Ernst Hartert. *Ibid.* pp. 295-296.

⁶ On Some Forms of *Coracina* (*Graucalus* Auct.) from the Solomon Islands. By Lord Rothschild and Ernst Hartert. *Ibid.* pp. 289-291.

⁷ A New *Monarcha* from Rossel Island. By Lord Rothschild and Ernst Hartert. *Ibid.* p. 297.

⁸ On the Geographical Forms of the Philippine Elegant Titmouse, *Pardaliparus elegans* (Lesson), with Descriptions of three New Subspecies. *Proc. U. S. Nat. Mus.*, Vol. 51, pp. 57-65. October 16, 1916.

Cooke's 'Second Annual Report of Bird Counts in the United States.'¹—This posthumous work of Prof. Cooke's is a further report upon an investigation which was originated by him and in which he was deeply interested. His idea was to obtain as many carefully made counts as possible of the number of birds breeding on definite areas of farm land and with these as a basis, estimate the actual number of breeding birds over much larger areas. No less than 315 counts were received for 1915, covering nearly all the States of the Union, but mainly as in 1914, from the northeast. A comparison of the reports from this region for the two years, we have as the average bird population for each 100 acres of the area covered, 119 pairs in 1914 and 125 pairs in 1915.

Many other interesting facts are demonstrated and while it is too early to draw detailed deductions the practicability and importance of this line of investigation are clearly shown, and it is to be hoped that the Biological Survey will continue the compilation of data on the lines which Prof. Cooke laid down.—W. S.

Pearl and Curtis on Dwarf Eggs.²—In this paper the character and cause of 'runt' eggs are discussed at great length. It seems that these dwarf eggs usually occur but once or twice in the history of one bird, and are generally due to some temporary stimulation and are not correlated with a morphological disturbance of the sex organs.

Some dwarf eggs are yolkless while others contain small yolks. While the authors' study has been based entirely upon eggs of the domestic fowl their conclusions undoubtedly apply to other birds as well.—W. S.

Shufeldt's 'Osteology of Palæornis, with other Notes on the Genus.'³—In spite of a colored plate and numerous photographic reproductions of portions of the skeleton, this paper is disappointing, since one fails to get a clear idea upon what points the author bases his conclusion that *Palæornis* and its allies "constitute a subfamily" of Psittacidae. There are detailed descriptions of the skeletal parts, most of which "seem to form no exception to the general rule for Psittaci," "are as in all of the Psittaci examined" etc. In other cases comparisons are made with *Ara* and *Amazona* and less frequently with *Cacatua* and *Conurus*, but nowhere is there a comparative table or a summary from which one can get the evidence.

The nomenclature used is a little unfortunate for while *Amazona* is rightly used instead of *Chrysotis*, the present day changes in the names

¹ Second Annual Report of Bird Counts in the United States with Discussion of Results. By Wells W. Cooke. Bull. 396, U. S. Dept. Agriculture. October 23, 1916. pp. 1-20.

² Studies on the Physiology or Reproduction in the Domestic Fowl—XV. Dwarf Eggs. By Raymond Pearl and Maynie R. Curtis. Jour. Agr. Research, VI, No. 25. September 18, 1916. pp. 977-1042, pll. CXII-CXIII.

³ Osteology of Palæornis, with Other Notes on the Genus. By R. W. Shufeldt. Trans. Royal Soc. of South Africa. Vol. V, pt. 5, June, 1916. pp. 575-591, pll. XXXIX-XLI.

Palæornis and *Conurus*, as adopted in Ridgway's 'Birds of North and Middle America,' are nowhere indicated. — W. S.

Shufeldt on Fossil Birds. — A portion of the right femur of a bird, larger than any now known in North America, which was found in Miocene (Salkehatchie Ooze) formation of the Stone River, South Carolina, is named by Dr. Shufeldt¹ who regards it as related to the *Anseres*, *Palæochenoides mioceanus* (p. 347).

In another paper² treating of the Bermuda 'bird-caves' he gives a popular summary of a much more comprehensive paper to appear later elsewhere. To this is added an 'Addendum' rather longer than the paper itself, in which new species based upon the bones found in the caves are described. These were intended for the later paper which is now indefinitely postponed, although references to the unpublished plates are here given! Unfortunately in two instances, no definite type specimens are designated in the descriptions and considering the number of species represented in the deposits and the fact that the new forms recently described in 'The Auk' (1916, pp. 194-195), probably represent some of them, serious questions of synonymy are likely to arise, which carelessness systematic work of this sort will further complicate. The new species named by Dr. Shufeldt are *Puffinus mcgalli* (p. 630), *P. parvus* (p. 632) and *Æstrelata vociferans* (p. 633). Measurements are given under only one of the species and while the other descriptions refer in detail to the amount of material described and figured in the unpublished paper, it is questionable whether enough data are here presented to constitute a recognizable description. — W. S.

Peters on a New Swift from Santo Domingo.³ — In working over the collection made in a trip to Santo Domingo during the winter and spring of 1916, in the interests of the Museum of Comparative Zoölogy, Mr. Peters finds the resident Collared Swift much blacker on the sides of the head than birds from Cuba and Jamaica and upon this difference establishes a new race, *Streptoprocne zonaris melanotis* (p. 37). — W. S.

Riley on New Birds from Santo Domingo.⁴ — This paper describes three new birds recently obtained by Dr. William L. Abbott, of Philadelphia on an expedition to Santo Domingo, and presented to the U. S. National Museum. He visited the highlands of the interior where few zoölogical

¹ New Extinct Bird from South Carolina. By R. W. Shufeldt. Geological Magazine (VI) Vol. III, No. 626, pp. 343-347. August, 1916.

² Bird-Caves of the Bermudas. By R. W. Shufeldt. The Ibis. October, 1916. pp. 623-635.

³ A New Swift from Santo Domingo. By James Lee Peters. Proc. N. E. Zool. Club, VI, pp. 37-38, Nov. 23, 1916.

⁴ Three Remarkable New Species of Birds from Santo Domingo. By J. H. Riley. Smithsonian Misc. Collns. 66, No. 15. December 1, 1916, pp. 1-2.

collectors have ever penetrated and the birds discovered constitute as Mr. Riley says "the most remarkable discoveries in West Indian ornithology in recent years.

One of them is an owl related to a Cuban species, which is described as *Asio noctipetens* (p. 1), Constanza, 4000 ft. Another is *Brachypiza antillarum* (p. 2), Constanza, 5000 ft., allied to *B. capensis* from the mainland, but constituting the first occurrence of the genus in the West Indies. The last and most remarkable is a White-winged Crossbill which was more or less common in the pine forest, at El Rio, 4000 ft. and which Mr. Riley names *Loxia megaplaga* (p. 1). The occurrence of a member of this boreal genus, in the West Indies was entirely unlooked for and constitutes a most surprising fact in geographic distribution.—W. S.

Townsend on Bird Conservation in Labrador.¹—This report is an "advance chapter" of the author's forthcoming work 'In Audubon's Labrador' and tells briefly of the terrible destruction of sea birds on the Labrador coast. Dr. Townsend suggests the forfeiting of fishing licenses by fishermen detected carrying fire arms or engaging in eggging, both of which are contrary to law. Another admirable suggestion is to make refuges of certain coast islands which could easily be protected by wardens and thus present object lessons to the natives and encourage similar protection elsewhere along the coast.—W. S.

Gyldenstolpe on the Birds of Siam.²—In this publication the author reports on the results of his second trip to Siam, 1914–1915. The main list consists in a fully annotated list of 353 species, one form *Mixornis gularis minor* (p. 60) Pak Koh, Northern Siam, is described as new. Other novelties obtained on the expedition have been described in the Ornithologische Monatsberichte for 1916, no copies of which have yet reached us, and Mr. Gyldenstolpe fortunately redescribes them here.

An introduction gives the explorer's itinerary and a consideration of the origin and development of the fauna of India and the Malay Region. Siam is divided zoögeographically into three regions (1) the mountain region of the north, (2) the lowlands of Northern and Central Siam and (3) Lower Siam. There are some admirable reproductions of photographs illustrating the scenery of the country and colored plates of five of the new forms of birds discovered by the expedition.

The report as a whole forms a valuable contribution to our knowledge of the avifauna of Siam and is a credit to its author.—W. S.

¹ Bird Conservation in Labrador. By Charles Wendell Townsend. Reprint from the Seventh Annual Report of the Commission of Conservation of Canada—Ottawa, 1916, pp. 1–9.

² Zoölogical Results of the Swedish Zoölogical Expeditions to Siam, 1911–1912 and 1914–1915. IV. Birds II. By Nils Gyldenstolpe. With one map, four plates and five figures in the text. pp. 1–160. 1916.

Grönvold's Illustrations of the Birds of South America.¹—The plates prepared by Mr. Grönvold to illustrate Brabourne and Chubb's 'Birds of South America' are now issued in folders as Lord Brabourne's untimely death has prevented the continuance of the work.—W. S.

Bryant on Food of the Road-runner in California.²—In 1911 and 1912 when the California Fish and Game Commission collected material for a study of the economic status of the Western Meadowlark, a special effort was made also to obtain stomachs of Road-runners. Eighty-four were collected, and Dr. H. C. Bryant now reports upon their contents. The primary object of this investigation of the Road-runner was to learn the relation of this ground cuckoo to other birds and particularly to the Valley Quail of which it was said to be a serious enemy. It was found that only two of the 84 Road-runners had eaten birds. These constituted only 1.7 per cent of the total food. There are a number of field observations of Road-runners devouring birds, but Dr. Bryant concludes that "the evidence at hand here in California does not justify the wholesale destruction of the Road-runner on the ground of its being an enemy of quail or other bird life."

The almost omnivorous habits of *Geococcyx* are well illustrated by Dr. Bryant's analyses. The principal items of food, besides birds (already mentioned), are vegetable matter, about 10 per cent, chiefly seeds of *Rhus integrifolia*, orthoptera, 36.82 per cent, beetles, 18.2 per cent, lepidoptera, 7.5 per cent, bugs 5 per cent, hymenoptera 4 per cent, and reptiles 3.7 per cent. Spiders, scorpions, millipeds and centipeds also were devoured.

The published information on the food of the road-runner in California is quoted, and a full bibliography given. The paper is well illustrated also, by tables, diagrams and half-tones. There are some errors in the spelling of scientific names and lack of system in the lists of species of insects identified. The statement that "in this habit of feeding upon reptiles, the Road-runner is almost unique among birds, with perhaps the exception of certain hawks and owls" (p. 37), also is objectionable. In its present broad form the pronouncement obviously is inaccurate. Even had its application been definitely restricted to the United States, the statement would still be too comprehensive. The fact is there are few families of land birds, but have representatives among the reptile eating species. Among these are the Herons, Chuck-will's-widow, Woodpeckers, Fly-catchers, Crows, Jays, Magpies, Meadowlarks, Grackles, Butcherbirds, Thrashers, Mockingbird, Wrens, and Thrushes. So small a bird as the Carolina Wren is an habitual lizard eater.

These are minor defects, however, and as it stands the paper is not only creditable to its author, but also is the best statement of the food of the Road-runner that has been published.—W. L. M.

¹ Illustrations to 'The Birds of South America.' By H. Grönvold. Parts I, II, III, IV.

² Univ. Calif. Publ. in Zool., 17, No. 5, pp. 21-58, pls. 1-4. October 26, 1916.

British Board of Agriculture Reports on the Food of the Rook, Starling, and Chaffinch.¹— The present reports are based on the examination of the stomachs of 277 rooks, 748 Starlings and 527 Chaffinches by Professors F. V. Theobald and Wm. McGowan (pp. 1–49) and 332 Rooks, 662 Starlings and 490 Chaffinches by Professor H. S. Leigh (pp. 49–56). These investigators agree fairly well that the Rook (*Corvus frugilegus*) is more injurious than beneficial, that the Starling (*Sturnus vulgaris*) if not too abundant, is a friend of the agriculturist, and that the Chaffinch (*Fringilla cælebs*) is about neutral so far as choice of food is concerned, but that a true estimate of its economic value depends upon the extent (as yet unknown) to which it distributes seeds of injurious plants. Details of the analyses are given.— W. L. M.

Food of a Collection of South Australian Birds.— On an expedition to the Musgrave Mountains in northwestern South Australia, Capt. S. A. White, preserved stomachs of 45 of the species of birds collected. The contents of these were analyzed by Mr. Arthur M. Lea of the South Australian Museum and analyses have been published in the report on the expedition.² These are among the most definite of notes on the food of Australian birds, and the report will be of great value to whoever attempts the task of assembling and generalizing all such information.— W. L. M.

Recent Publications on Bird Conservation.— Bulletins and reports on one phase or another of bird conservation are appearing so rapidly that it is possible only to mention them very briefly in this connection. The U. S. Department of Agriculture in Farmers' Bulletin No. 774³ presents the usual summary of the game laws for 1916, while Senate Executive Document E. gives the text of the recent wild bird treaty with Canada. Massachusetts is well to the fore with valuable publications. A beautifully printed work⁴ by Bradford A. Scudder is published by the Fish and Game Protective Association, presenting full information regarding methods of attracting and increasing the numbers of wild birds; while a bulletin⁵ on the natural enemies of birds and a circular⁶ on food plants to attract birds and protect fruit, both by Edward H. Forbush are issued by the State Board of Agriculture.

An especially noteworthy and welcome bulletin is issued by the Uni-

¹ Suppl. 15, Journ. British Bd. Agr., May, 1916. pp. VI + 56.

² Trans. Roy. Soc. South Australia, 39, 1915, pp. 760–766.

³ Game Laws for 1916. By T. S. Palmer, W. F. Bancroft, and Frank L. Earnshaw. Farmers Bulletin 774, U. S. Dept. Agriculture. October 9, 1916. pp. 1–64.

⁴ Conservation of Our Wild Birds. By Bradford A. Scudder. Massachusetts Fish and Game Protective Assoc., 748 Tremont Bldg., Boston, Mass. [1916], pp. 1–71.

⁵ The Natural Enemies of Birds. By Edward Howe Forbush. Economic Biology Bull. 3, Massachusetts State Board of Agriculture. Boston, Mass., 1916. pp. 1–58.

⁶ Food Plants to Attract Birds and Protect Fruit. By Edward Howe Forbush. Circular No. 49, *Ibid.* 1916. pp. 1–21.

versity of South Carolina entitled 'Decrease of Birds in South Carolina,'¹ by Belle Williams, secretary of the South Carolina Audubon Society. This presents reports from all over the State on the abundance of birds, enforcement of laws, etc., and covers effectively the whole problem of bird conservation in one of the states where educational work of this kind is sadly needed.

In 'Science' for September 15, Dr. Joseph Grinnell and Mr. Tracy I. Storer discuss 'Animal Life as an Asset of National Parks.' — W. S.

The Ornithological Journals.

Bird-Lore. XVIII, No. 5. September–October, 1916.

Cardinals Through the Year. By Mrs. Robert G. Steele.

Protection of Migrating Birds in England. By W. W. Grant.— Describing the perches on lighthouses.

An Ancient Bird Census in Asphaltic Petroleum. By M. C. Frederick.— Account of the bird remains discovered in the La Brea deposits, Los Angeles, Cal.

Oregon Notes. By Sarah G. Pickins.

Winter Feeding-Stations at Highland Park, Rochester, N. Y. By W. L. G. Edson and R. E. Horsey.— Tabulates actual number of visits to feeding stations in one day. The Chickadees score was 1239!

Screech Owl Johnnie. By Florence M. Bailey.

The colored plate depicts four species of Thrasher, while the Audubon leaflet treats of the Avocet.

The Condor. XVIII, No. 5. September–October, 1916.

More Bird Notes from Big Bear Valley, San Bernardino Mountains. By W. M. Pierce.— Fourteen species.

Meeting Spring Half-way (cont'd). By Florence M. Bailey.— Corpus Christi to the Mexican Boundary.

A Hospital for Wild Birds. By Dr. W. W. Arnold.

Some Birds of the Fresno District, California. By J. G. Tyler.

Some Bird Notes from Humboldt Bay. By Joseph Mailliard.

Notes of the Golden Eagle in Arizona. By F. C. Willard.

The Oölogist. XXXIII, No. 9. September 15, 1916.

Relative to the Bald Eagle in Alaska. By I. J. Van Kammen.

Alarming Scarcity of Vultures. By E. F. Pope.— Destroyed in Texas as carriers of cattle disease. Cf. also No. 10.

Blue-Bird. VIII, No. 8. September, 1916.

An Experience with the Winter Wren. By C. J. Stanwood.— An admirable study of the nesting and rearing of the young.

The Wilson Bulletin. XXVIII, No. 1. March, 1916.

¹ Decrease of Birds in South Carolina. By Belle Williams. Bull. 47, Univ. of South Carolina, Columbia, S. C. August, 1916. pp. 1–69.

North Dakota. By Gerard A. Abbott.

Notes on Birds of Regions with Primitive Prairie Conditions. By T. L. Hankinson.—An Ecological Classification.

The Terns of Weepecket Islands, Massachusetts. By A. R. Cahn.

A Study of a White-breasted Nuthatch. By Winsor M. Tyler, M. D.

November Bird-Life at Reelfoot Lake, Tenn. By A. F. Gainer.—Apparently the first paper on birds of this region since that of S. N. Rhoads (Proc. Acad. Nat. Sci. Phila., 1895).

The Whisper Songs of Birds. By J. J. Schafer.—Heard both in spring and autumn.

The Wilson Bulletin. XXVIII, No. 2. June, 1916.

The Yellow-billed Tropic-Bird. By Karl Plath.—In Bermuda.

A Brewer Blackbird Roost in Redlands [Cal.]. By Florence M. Bailey.

The Goldfinch in Captivity. By J. Claire Wood.

The Annals of Three Tame Hermit Thrushes. By C. J. Stanwood.

A Brief History of the Nebraska Ornithologists' Union. By Myron H. Swenk.

A Recent Instance of the Nesting of Barn Swallows on Cliffs. By N. DeW. Betts.

The May Bird Census.—Lists for single days in mid-May, the largest being 138 at Oberlin, Ohio, May 15, 1916, made by six observers.

The Wilson Bulletin. XXVIII, No. 3. September, 1916.

A Strange Nesting of the Barred Owl and Red-shouldered Hawk. By Walter A. Goelitz.—Close together on the same tree.

Birds by the Wayside. By Althea R. Sherman.—In Palestine and from Jaffa to Constantinople.

Fall Migration Records (1906-1915) at Ann Arbor, Michigan. By A. D. Tinker and N. A. Wood.

An April Day's Migration in the Dakota Valley. By S. S. Visher.

Preliminary List of the Birds of Floyd County, Iowa. By C. L. Fenton.—Ninety species.

Notes on the Breeding Warblers of Tennessee. By A. F. Gainer.

The Ibis. X Series, IV, No. 4. October, 1916.

On the Coloration of the Mouths and Eggs of Birds. II. On the Coloration of Eggs. By C. F. M. Swynnerton.—This important paper reviews the various theories that have been advanced to explain the coloration of eggs and presents a number of original comments and criticisms. Several experiments are also described in detail, dealing with transference of eggs from one nest to another, and the preference of the rat and mongoose for eggs of various colors.

Some Birds of Palawan, Philippine Islands. By Willoughby P. Lowe.

The Bird-Caves of the Bermudas and their Former Inhabitants. By Dr. R. W. Shufeldt (see p. 98 *antea*).

Eider Duck on the Ythan. By H. R. Kelh.

Obituaries of J. A. Harvie Brown and others.

Bulletin of the British Ornithologists' Club. CCXVIII. October 24, 1916.

The following new birds are described: By Lord Rothschild, *Micræa flavigaster laetissima* (p. 4), Queensland. By Dr. Hartert, *Corydon sumatranus brunnescens* (p. 4), Borneo; *Diaptrornis semicinctus* (p. 4), E. Congo Free State. By Mr. T. Carter, (p. 6); *Calamanthus campestris hartogi*, *Sericornis maculatus hartogi*, and *Stipiturus malachurus hartogi* all from Dirk Hartog Isl., W. Australia.

British Birds. X, No. 5. October, 1916.

Obituary of J. A. Harvie Brown.

Some Breeding Habits of the Sparrow Hawk (concluded). By J. H. Owen.

British Birds. X, No. 6. November, 1916.

The Moults of the British Passeres with Notes on the Sequence of their Plumages. By H. F. Witherby (continued).

Avicultural Magazine. VII, No. 11. September, 1916.

Nesting Notes from the Zoological Gardens. By D. Seth-Smith.—Rhea, Tinamou, Manucode, etc.

The Black Redstart and its Breeding Haunts. By H. D. Astley.

Bird Song. By "Birdlover."—An excellent review of the nature and origin of song.

Avicultural Magazine. VII, No. 12. October, 1916.

Notes on the Red-winged Bush Shrike (*Telephoneus australis minor*). By V. G. L. van Someren.

The Imitative Power of Birds. By A. G. Butler.

Cuvier's Podargus. By Graham Renshaw.—Habits in captivity.

Bird Life on Yanko Creek, N. S. W. By C. Barrett.

Bird Notes. VII, No. 4. April, 1916.

Some Colony Birds. Reprint from 'Timehri,' Jour. Roy. Agric. and Commercial Soc. of British Guiana.—Account of many British Guiana species, continued to the September number.

Bird Notes. VII, No. 5. May, 1916.

Bird Catching in India. By Douglas Dewar.

Bird Notes. VII, No. 6. June, 1916.

Photograph of a hybrid quail, *Callipepla squamata* × *Lophortyx californica*.

Journal of the South African Ornithologists' Union. XI, No. 1. December, 1915.

The Birds of Philipstown, Cape Province with Notes on their Habits. By H. L. Hare.

Ornithological Notes from Natal. By E. C. Chubb.

The Curlew in South Africa. By John Wood.

Remarks upon some Widely Distributed Family Traits. By A. A. Lane.

Birds of the Kaffrarian Frontier. By F. A. O. Pym.

Birds in Relation to their Prey. By C. F. M. Swynnerton.—Feeding Actions of Wood Hoopes, Small Hornbill and a Babbler.

The South Australian Ornithologist. II, Pt. 8. October, 1916.

Birds of the North and Northwest of Australia (No. 7). By G. M. Mathews.

Notes on the Genus *Epthianura*. By A. M. Morgan.

Revue Française d'Ornithologie. VIII, No. 90. October, 1916.
[In French.]

List of Birds Collected or Observed on the Ivory Coast, [Guinea] 1906-1907 and 1913-1914 (continued in No. 91). By Drs. Bonet and Millet-Horsin.

Contribution toward an Ornithological Study of Provence. By Jos. L'Hermitte (concluded).

Revue Française d'Ornithologie. VIII, No. 91. November, 1916.

Noxious Birds and Animals and their Reasonable Destruction.—By Count Tristan.

Ardea. V, No. 2. August, 1916. [In Dutch.]

Report on the Meeting of the Netherlands Ornithological Society, Leiden, March 26, 1916.

On Ringing Titmice and Other Small Birds. By J. L. F. DeMeyers.

Contribution to a Study of the Least Bittern (*Ardetta minuta*). By A. Burdet.

Messenger Ornithologique. VII, No. 3. [In Russian.]

Materials for an Ornithology of N. W. Mongolia (cont'd.). By A. I. Tugarinow.

On the Gray Goldfinch (*Carduelis caniceps*) of Russian Turkestan. By N. A. Sarudny.

Preliminary Review of the Subspecies of the Linnets (*Acanthis cannabina*). By Prince Alex. Koudashev.—Seven are recognized, of which *A. c. taurica* (p. 178) from Krym and *A. c. persica* (p. 179) from Northern Persia are new.

Turtur ferrago silvarum subsp. nova. (p. 181.) By H. Johansen.

On the Paper of N. A. Sarudny "On some Swallows from Russian Turkestan." By Baron G. V. Loudon.

Nest and Eggs of *Numenius tenuirostris* Vieill. By V. E. Ushakov.

Ornithological Articles in Other Journals.¹

Pearson, T. G. Uncle Sam's Birds. (Amer. Mus. Journ., XVI, No. 6, October, 1916).

Despott, G. Ornithological Report for the Maltese Islands. (Zoologist, October, 1916).

Butterfield, E. P. Behavior of Two Young Cuckoos in One Nest, (Zoologist, August, 1916.)

Saunders, W. E. Another Nesting Site of the Prairie Warbler in Ontario. (Ottawa Naturalist, Aug.-Sept., 1916.)

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Gammell, Isaac. The Evening Grosbeak in the East. (Canadian Record of Science, IX, No. 8.)

Allen, E. C. Annotated List of Birds of Yarmouth and Vicinity, Southwestern Nova Scotia. (Trans. Nova Scotia Inst. of Science, XIV, pt. 2.) — 170 species and subspecies.

Bunker, P. D. Nesting of the Philippine Glossy Starling. (Philippine Jour. of Science, XI, Sect. D, No. 4, July, 1916.)

McGregor, P. C. New or Noteworthy Philippine Birds. I. (Philippine Jour. of Science, XI, Sect. D., No. 4, July, 1916.) — *Leucotreron merrilli* (p. 269) Luzon, is described as new.

Mottram, J. C. An Experimental Determination of the Factors which Cause Patterns to Appear Conspicuous in Nature. (Proc. Zool. Soc. London, 1916, pt. II.)

Bate, Dorothea M. A. On a Small Collection of Vertebrate Remains from the Har Dalam Cavern, Malta; with Note on a New Species of the Genus *Cygnus*. (Proc. Zool. Soc. London, 1916, pt. II.) — *Cygnus equitum* (p. 427) sp. nov.

Coward, T. A. Change in the Habits of the Black-headed Gull. (Mem. and Proc. Manchester Lit. and Phil. Soc., Vol. 60, pt. I.) — *Larus ridibundus*.

Haagner, A. K. Game and Bird Protection in South Africa: A Short Comparison with some Other Countries. (S. Afr. Jour. of Science, XII.)

Moulton, J. C. Hand List of the Birds of Borneo. (Jour. Straits Branch, Roy. Asiatic Soc., 1914, No. 67.) — A list of 555 species by the curator of the Sarawak Museum, and a bibliography of 231 titles.

Baker, E. C. Stuart. Game Birds of India, Burma and Ceylon. (Jour. Bombay Nat. Hist. Soc., XXIV, No. 3.)

Currie, A. J. Birds of Lahore and Vicinity. (Jour. Bombay Nat. Hist. Soc., XXIV, No. 3.)

Whistler, H. Some Birds Observed at Dalhousie. (Jour. Bombay Nat. Hist. Soc., XXIV, No. 3.)

Salvadori, T. Birds collected by the Duchess of Aosta in Equatorial Africa. (Ann. Mus. Zool. K. Univ. Napoli, IV, No. 10.) [In Italian.] — List of 190 species.

Angelini, G. Contribution on the Distribution of *Lanius senator badius* (Hartl.). (Boll. Soc. Zool. Ital., X-XI.) [In Italian.]

Selous, Edmund. Sexual Selection in Birds. (Wild Life, June-September, 1916.)

Scott, Rev. D. A. Illustrated articles on the English Curlew and the Peregrine Falcon. (Wild Life, July and September, 1916.)

Publications Received.—**Bangs**, Outram. The Smaller Mockingbird of the Northern Bahamas. (Proc. N. E. Zool. Club, VI, p. 23, March 29, 1916.)

Bryant, Harold C. Habits and Food of the Roadrunner in California. (Univ. of Cal. Publ. in Zool., Vol. 17, No. 5, pp. 21-50, October 26, 1916.)

Cherrie, George K. A Contribution to the Ornithology of the Orinoco Region. (Science Bull., Museum Brooklyn Inst., Vol. 2, No. 6, pp. 133-374, September 1, 1916.)

Cooke, Wells W. Second Annual Report of Bird Counts in the United States, with Discussion of Results. (Bull. 396, U. S. Dept. Agr., pp. 1-20, October 23, 1916.)

Crosby, M. S. The Spring Migration of Birds in Dutchess County, N. Y. 12mo., folder. 1916.

Curtis, M. R. Frequency of Occurrence of Tumors in the Domestic Fowl. (Jour. of Agriculture, V, No. 9, pp. 397-404, November 29, 1915.)

Forbush, Edward H. (1) The Natural Enemies of Birds, Economic Biology. Bull. No. 3, Mass. State Board of Agriculture, pp. 1-58, 1916. (2) Food Plants to Attract Birds and Protect Fruit. Circular No. 49, *Ibid.*, June, 1916.

Fry, H. J. The College Graduation Thesis as a Method of Bird Study. (Bird-Lore, July-August, 1916, pp. 261-265.)

Grinnell, Joseph. A New Ruffed Grouse from the Yukon Valley. (The Condor, XVIII, pp. 166-167, July, 1916.)

Grinnell, Joseph and **Storer**, Tracy I. Animal Life as an Asset of National Parks. (Science, XLIV, No. 1133, pp. 375-380, September 15, 1916.)

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CORRESPONDENCE.

Habits of the Great Crested Grebe.

EDITOR OF 'THE AUK'

Dear Sir:—

In this year's (1916) April number of 'The Auk,' Mr. Julian Huxley, in his interesting paper 'Bird Watching and Biological Science,' says, speaking of the Great Crested Grebe:—"There (that is to say in inland waters) in February, pairing-up takes place, a process not yet wholly disentangled, but certainly associated with a great deal of flying and chasing" (p. 150). Insofar, however, as I have been able to observe, this supposed pairing-up process does not take place at all, so that there is nothing to disentangle in relation to it, nor do any difficulties, specially appertaining to the behavior of the birds at this time, present themselves. Mr. Huxley was kind enough, before he left England, to send me his notes upon this species, and he suggested that I should investigate what took place immediately after the arrival of the birds in February, since he himself was precluded from doing so.

Accordingly, on the 15th of February, 1915, I went down to the Fring Reservoirs, and was told, by the keeper at whose cottage I stayed, that only two birds had yet been seen anywhere. Next day, however, the head keeper sent word that six had come down (I think the evening before, *i. e.* the 15th) on one of the two larger sheets of water. It was the opinion of the keepers that my own arrival and that of the birds synchronised closely. From now onwards, I watched the birds, up to March the 7th, by which time most, if not all of them, had at least located their nesting sites. As a result, I can say that, according to what I saw, these Grebes (I am not considering young and previously unmated birds, of which there was no indication) arrive paired, that they enter, either at once or very shortly, upon their conjugal display actions, and that the flying and chasing is neither a very pronounced feature, nor has it the import which has been attributed to it by (if I mistake not) the head keeper of the Tring Reservoirs; that is to say, it has not essentially to do with the assumed pairing-up of the actually already paired birds. The above is the gist of the notes which I took, and which still remain in their MS. state. Otherwise I should have sent them to Mr. Huxley, and had, indeed, intended to do so, in any shape or form, but one thing gets in the way of another, and tardiness increases with age.

It would seem therefore that, as I had suspected (and suspect in many more instances than where this is supposed to be the case) the Great Crested Grebe pairs for life, which fact, if established, would be in harmony with my view that excitatory sexual movements either first arose under,

or continued after, the first union of the sexes, to accompany monogamous conjugal relations, and then, by a process of evolution, the steps in which may, I think, be partly traced and partly inferred, passed, as a culmination, into true Darwinian sexual selection. I do not however mean to imply that this has been the invariable course of development, or that mere promiscuity may not, at an earlier stage, have sometimes preceded monogamy.

At p. 151, speaking of the "ceremonies connected with coition," Huxley says:— "The chief point to be remarked is that both cock and hen may adopt this attitude" — that is to say the prostrate attitude, preceding and accompanying coition, which rightly belongs to the female alone. My own observations, however, made in 1900 and 1901, were sufficient to assure me that this interchangeability of action as between the two sexes, in their sexual relations, extended to the actual pairing itself, and I have since confirmed this in the case of the Little Grebe (or Dabchick), for, having closely and continuously watched a pair of these birds, established in a pond, and thus, as I may say, well under control, I have seen either bird alternately assume the part of either sex during coition. This reversal extended to the minutest particular, so that the false and true unions were indistinguishable. Thus we have — for what else are we to term it? — functional hermaphroditism in both the Great Crested and Little Grebe. My observations on the latter species were published in 'Wild Life' from July to December (inclusive), 1915.

It is, I think, a legitimate inference that this dual functioning of either sex, in the primary and all-important sexual act, must (or is likely to) imply a similar duality of the sexual psychology, in each, and this would, in itself, account, or help in accounting for, the identity of much of the masculine and feminine conjugal display action in the Great Crested Grebe. I have made similar observations on the Moorhen — in which species also this identity exists — and, so far as the actual pairing is concerned, in the case of the Dovecote Pigeon. Also I have good first hand evidence of the same nature concerning the Mute Swan, and can myself speak as to very salient springtide antics carried out by both the male and female Whooper Swan, when conjugally united. To me it is almost inconceivable that these peculiar pairing habits have been brought about, independently, in different species, through the operation of more or less recent utilitarian causes. The root cause is, I believe, the joint inheritance, by all, and in each sex, through a common line of ancestry, dating from a remote past, of that sexual psychology which once co-existed with physiological hermaphroditism; of which persistence, therefore, the lesser or secondary bisexual activities are also to be regarded as effects. It is, of course, obvious that, so far as the sexual mentality of birds is concerned, the above inference need not alone apply to species that have this odd habit of double coital functioning, for a general inherited tendency need not necessarily be accompanied by some particularly salient indication of it, in action. The study of man sufficiently illustrates this.

In the paper in which I first recorded the activity here specially dwelt upon, in the case of the Great Crested Grebe, I put forward the above view, in explanation of it. Now, many years afterwards, I learn that the late Professor Metchnikoff held the same opinion (whether in reference to my own notes which, so far as I know, first placed the facts upon record, or otherwise, I am not sure) and Haeckel's concurrence also, I think, lies implicit in his work 'The Evolution of Man,' though he does not there mention — probably through not having been aware of it — the matter in question. I would suggest, therefore, under shelter of these names, that a new possible factor enters into the philosophy of nuptial or ante-nuptial excitatory actions in birds, and, through these, of true purposive display and progressive sexual selection.

EDMUND SELOUS.

6 Albany Gardens,
King's Road,
Richmond Survey.
Nov. 22, 1916.

NOTES AND NEWS.

PROFESSOR FOSTER ELLENBOROUGH LASCELLES BEAL, a Fellow of the American Ornithologists' Union, died suddenly at his home near Berwyn, Md., October 1, 1916. Professor Beal was in the 77th year of his life and in the 25th of service in the U. S. Biological Survey. He was born at South Groton, Massachusetts, January 9, 1840. His early life was spent upon a farm, but he was determined to get an education and was graduated from the Massachusetts Institute of Technology in 1872. He was professor of mathematics in the United States Naval Academy in 1873-4, and professor, in turn, of mathematics, zoölogy, and geology in the Agricultural College at Ames, Iowa, from 1876 to 1883. He was employed in the Biological Survey for six months in 1886 and began his permanent term of service in 1892. He prepared, either wholly or in part, 24 official publications, besides numerous other scientific articles, and played an important part in building up the existing system of laws for the protection of American birds. A full account of the life and work of Professor Beal will be published in a later number of 'The Auk.' — W. L. M.

NEVER before has death taken such heavy toll from the active membership of the American Ornithologists' Union, as in the year 1916. The loss of four of the Fellows, Dr. D. G. Elliot,¹ Prof. Wells W. Cooke,¹ Prof. F. E. L. Beal, and Dr. E. A. Mearns, two of whom were founders, has now reduced the list of surviving founders of the Union to less than half its original number. Dr. Edgar Alexander Mearns died at the Walter Reed Hospital, in Washington, D. C., on November 1, 1916, only a few days before the last annual meeting.

The son of Alexander and Nancy R. (Carswell) Mearns, he was born at Highland Falls, N. Y., September 11, 1856. He graduated from the College of Physicians and Surgeons (Columbia University) in 1881, and in the same year married Miss Ella Wittich of Circleville, Ohio. On December 3, 1883, he received an appointment as first lieutenant and assistant surgeon in the medical corps of the U. S. Army and remained 25 years in active military service. He was promoted to the rank of captain and assistant surgeon December 3, 1888, major and brigade surgeon of volunteers, June 4, 1898, major and surgeon in the regular army February 2, 1901, and was retired with the rank of lieutenant colonel on January 1, 1909. He was one of the most eminent of that group of army surgeons which includes Cooper, Coues, Hammond, Henry, Merrill, Suckley and others, who in addition to their regular military duties, found time to do field work in natural history and thus were able to add much to our knowledge of the zoölogy of the west.

Dr. Mearns' first ornithological papers, containing notes on rare birds in the Hudson Valley near West Point, appeared in the 'Bulletin of the Nuttall Ornithological Club in 1878, and his 'List of Birds of the Hudson Highlands' which still remains one of the most complete papers on the birds of this part of New York, was published in 1879-81. While serving in the army his most notable work was done at Fort Verde, Ariz., in the eighties, on the Mexican Boundary Commission in 1892-94, and during his service in the Philippines in 1903-04 and 1905-07. Reports have been published on only a part of his Boundary collections. His 'Mammals of the Mexican Boundary' contains accounts of the trees, big game and rodents but unfortunately this report was never completed and no comprehensive account of the birds has thus far been published. Several papers on his Philippine birds have appeared from time to time.

In 1909 Dr. Mearns accompanied Col. Theodore Roosevelt on the Smithsonian African Expedition to British East Africa and in 1911-12 he visited Abyssinia as field naturalist of the Childs-Frick African Expedition. Since his return from this expedition he has been busily engaged in working up his collections. He has published a number of papers on the most interesting novelties among the birds, and at the time of his death was preparing a comprehensive report on the birds obtained in Africa.

Dr. Mearns was an enthusiastic all-round naturalist. While interested

¹ See Vol. XXXIII, pp. 230-231 and 354-355, 1916, and memorial address, *antea* pp. 1-10.

primarily in vertebrates, he was also a good field botanist and devoted much attention to land shells and to ethnology. He was an indefatigable collector, a careful observer, and wherever he went he never missed an opportunity to secure material illustrating the natural history and ethnology of the region. The collections of the U. S. National Museum and the American Museum of Natural History have been greatly enriched as a result of his active field work. He also had the ability and desire — too often lacking in active field collectors — to work up his material whenever he had the proper facilities, and as opportunity offered he placed on record descriptions of new species, and notes on nomenclature, distribution and habits of the birds and mammals which had come under his observation.

He was an Associate in Zoölogy of the National Museum, a patron of the American Museum, a correspondent of the Academy of Natural Sciences of Philadelphia, a Founder of the American Ornithologists' Union, and a member of the American Association for the Advancement of Science, the Linnæan Society of New York, the Biological Society of Washington, and the Washington Academy of Sciences. In manner he was quiet and unassuming, deeply interested not only in his own work but in that of others and his enthusiasm and uniform cheerfulness were an inspiration to those who were privileged to be numbered among his friends.

A Memorial address on Dr. Mearns will be read at the next meeting of the Union.— T. S. P.

EDWARD ARTHUR BUTLER, a Corresponding Fellow of the American Ornithologists' Union died at his home, Winsford Hall, Stokesby, near Great Yarmouth, England, on April 16, 1916, in his 73rd year. We learn from 'The Ibis' that he was born in Warwickshire and was educated at Eton, entering the army in 1864 and retiring with the rank of Lieut. Colonel, in 1884. Later he participated in the Boer War in South Africa. During eleven years in India he was associated with Allan Hume and others who, like himself, were interested in ornithology. He did much collecting and was a contributor to 'Stray Feathers' and the 'Bombay Gazateer'. The results of his observations in Africa were published in 'The Zoologist' and 'The Ibis.'— W. S.

PROF. ALBERT JOHN COOK of Claremont, Calif., an Associate Member of the American Ornithologists' Union from 1894 to 1898, died at the home of his son at Owosso, Mich., on September 30, 1916. Prof. Cook was born at Owosso on August 30, 1842, and at the time of his death had recently celebrated his 74th birthday. He was the son of Ezekiel and Barbara Ann (Hodge) Cook, and a graduate of the Michigan Agricultural College (B. S. 1862, M. S. 1865, and D. Sc. 1905). For 26 years he was connected with the faculty of his alma mater. He served as instructor in mathematics 1867-69, and professor of zoölogy and entomology 1868-93, at the same time acting as curator of the Museum 1875-93,

and entomologist of the experiment station 1888-91. In 1893 he removed to Claremont, Calif., where, for 18 years, until 1911, he was associated with Pomona College as professor of biology. During the last five years of his life he served as state commissioner of horticulture of California.

Although primarily an entomologist, Prof. Cook was interested in other branches of zoölogy and published several valuable papers on birds. From 1872 to 1875 he contributed five short articles on the relation of birds and insects to the Reports of the Michigan State Pomological Society and the State Board of Agriculture and in 1896 one on the 'Food of Woodpeckers and Flycatchers' to 'The Auk.' His principal ornithological contribution was his 'Birds of Michigan' published in 1893 as Bulletin 94 of the Michigan Agricultural Experiment Station. This report was issued in two editions, one containing 148 pages, in April, and the other containing 168 pages, in September. It included notes on 332 species and a full bibliography of Michigan ornithology. This very useful list, which brought together in convenient form the many scattered notes on the birds of the State, was reviewed in 'The Auk' for 1893, pp. 351-352. Some of the species have since been transferred to the hypothetical list and Prof. W. B. Barrows, although adding a number of others in his 'Report on Michigan Bird Life,' in 1912 recognized only 326 species as positively identified within the limits of the state.

Prof. Cook was married twice. On June 30, 1870, he married Miss Mary H. Baldwin of Dayton, O., and on July 3, 1897, Mrs. Sarah J. Eldredge of Pasadena, Calif. He is survived by the latter, by his son, A. B. Cook of Owosso, Mich., and by his daughter, Mrs. Lyman J. Briggs of Washington, D. C.—T. S. P.

PROF. DONALDSON BODINE, an Associate of the American Ornithologists' Union, died on August 26, 1915, at Douglas Lake, Michigan, in the forty-ninth year of his age. He was born in Richboro, Pa., December 13, 1866; graduated from Cornell University in 1887, and received the degree of Sc.D. from his Alma Mater in 1895. At the time of his death he was professor of geology and zoölogy in Wabash College, Crawfordsville, Indiana.—J. H. S.

TIMOTHY OTIS FULLER, an Associate of the American Ornithologists' Union, died at his home in Needham, Mass., August 17, 1916, aged 71 years. He was born in Needham, February 2, 1845, where his family had resided since the beginning of the nineteenth century. While engaged in business he found time to serve his town in several important capacities. Mr. Fuller's great interest however, was in nature and he spent much time in tramps, studying the birds and flowers of his vicinity as well as those of the White Mountains, a region with which he became thoroughly familiar. He was a true lover of nature and obtained from his studies an unusual knowledge of the "great outdoors" which he was ever ready to share with others.—W. S.

LEWIS LINDSAY DYCHE, noted as an explorer and zoölogical collector, Professor of Zoölogy at the University of Kansas, and an Associate of the American Ornithologists' Union, died after a week's illness at Stormont Hospital in Topeka, Kansas, on January 20, 1915.

Professor Dyche was born in Berkeley Springs, West Virginia, on March 20, 1857. His parents removed to Kansas three months later and settled on the Wakarusa River near Topeka. He began his education in a country school at the age of twelve, then entered the State Normal School at Emporia and three years later in 1881 enrolled in the State University at Lawrence. Here he came in contact with Dr. Francis H. Snow who seeing his strong interest in zoölogy encouraged and aided him in every way possible. Professor Dyche graduated from the University in 1884, took the degree of Master of Arts in 1886 and Master of Science in 1888. Even before his graduation he was made Assistant Professor of Zoölogy. In 1890 he became curator of birds and mammals in the University Museum of Natural History and was made Professor of Zoölogy. Though occupied in teaching and lecturing much of his time was given to building up the collections of vertebrates in the museum. His energies were devoted largely to collecting and mounting groups of large mammals for exhibition but birds were not neglected and the bird skins gathered on his expeditions form the nucleus of the collections in ornithology at present stored in the institution. Notable among his gatherings is a series of skins from Greenland. His dreams of a Museum were realized in 1903 when he was given a new building on the University Campus in which to house his collections. In 1909 Professor Dyche while still retaining his position in the university was made State Fish and Game Warden and held that position until the time of his death. He was elected an Associate in the Union in 1886. Though his observations as a field naturalist were many, his published writings are few. He contributed brief notes on the occurrence of certain birds in Kansas at various times to 'The Auk' and to the 'Transactions of the Kansas Academy of Science', and short papers appeared elsewhere.—A. W.

MISS MARY BISSELL FERRY, an Associate of the American Ornithologists' Union, died in Norwalk, Conn., March 18, 1915, in the sixty-sixth year of her age. She was a daughter of the late U. S. Senator Orris S. Ferry, of Connecticut, and granddaughter of Gov. Clark Bissell of the same State. A cousin, Miss Mary A. Bissell, writes of her: "Miss Ferry was a woman of noble character, broad philanthropy, and high literary attainments, inheriting much of her father's vigorous mentality. She was an ardent lover of nature, and an enthusiastic bird student lending her influence to all legislation for their protection. The last ten years of her life were spent with her mother, at their home in Norwalk, amid charming surroundings of woodland and meadow, made especially attractive to the birds by pools, bird shelter boxes, and food in abundance during the winter months. Her little feathered friends repaid their sympathetic and gener-

ous benefactor by flocking in great numbers to the place, and showing friendliness and tameness." Miss Ferry was born in Norwalk, September 17, 1849.— J. H. S.

MRS. JANE LOUISA HINE, an Associate of the American Ornithologists' Union, died in Sedan, Indiana, February 11, 1916, in her eighty-fifth year. She was the daughter of Lonson Brooks, and was born in Erie County, Ohio, April 2, 1831. After attending public schools in her native county she finished her education at Oberlin College. Early in life she became interested in birds and continued to study them as long as she lived. She wrote much on birds for 'The Farmer's Guide,' Huntington, Ind., and many of her notes are published in Butler's 'The Birds of Indiana.' Her 'Observations on the Ruby-throated Hummingbird' is printed in 'The Auk' (1894, pp. 253-254).— J. H. S.

OWING to ill health, Mr. H. W. Henshaw has resigned his position as Chief of the Bureau of Biological Survey, Department of Agriculture, dating from December 1. Mr. Henshaw has been connected with the Department of Agriculture since 1905, serving as Assistant Chief of the Bureau until 1910, thence on as Chief. During this period the Survey has grown rapidly. In order that the Bureau may continue to have the benefit of Mr. Henshaw's knowledge and experience he will retain official connection with it as consulting biologist.

Mr. E. W. Nelson, who has been on the scientific staff of the Bureau since 1890 and Assistant Chief since 1914, has been appointed to succeed Mr. Henshaw as Chief of the Bureau.

DR. GEORGE W. FIELD, formerly State Fish and Game Commissioner of Massachusetts is now a member of the Biological Survey Staff, in charge of Federal bird and mammal reservations.

ALICE HALL WALTER in the September-October issue of 'Bird-Lore' discusses a matter of vital importance in the advancement of popular ornithology.

"From time to time," she writes, "and from more than a single source, there has come the criticism that bird-study is in danger of being over-popularized. This criticism does not imply that bird-study should be limited either in its scope or to students of mature years and serious purpose. It does imply that there are persons who care to study birds only in a superficial way, that there are others who present lectures of a merely popular and too frequently similar type, and that the somewhat confused methods of bird- and nature-study at present in use sometimes miss the point by reason of uninspired application and lack of personal initiative."

Ornithology is fortunate in being, for some reason or other, better adapted to popular study than any other science, and for that very reason the great-

est care should be taken to prevent its degeneration into a mere temporary fad or to be made ridiculous at the hands of exponents who are unfitted for their task.

The writer has always maintained that a lecture or an article can be scientific without being tiresome or unintelligible to a popular audience. In other words scientific facts can be presented in popular language without losing any of their force, but the man who does this must know, in the first place, what he is talking about.

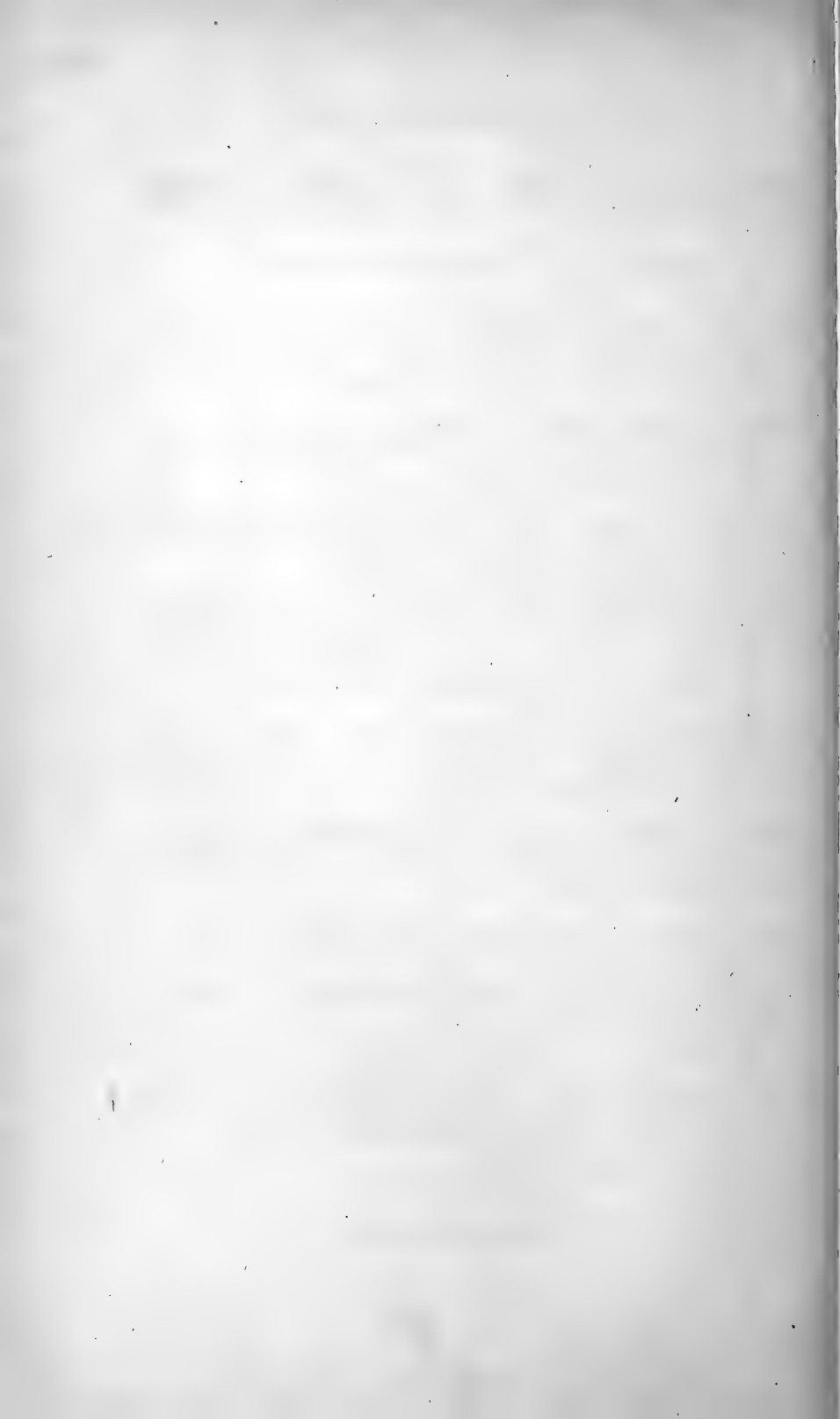
As Mrs. Walter says "the superficial student is apt to shun the trained ornithologist's method" and "to balk at his standard of thoroughness." The inevitable result is to throw discredit upon the whole field of popular ornithology.

It would seem that those responsible for the activities of ornithological clubs or classes could do much to check such tendencies as Mrs. Walter has referred to.

The desire to have a lecturer at every club meeting and the natural necessity of cutting down expenses leads to accepting those who are only too anxious to appear on the lecture platform for little or no compensation and whose stock in trade consists of mere anecdotes and time worn facts. Better by far have one good speaker a year who is capable of speaking from personal experience and research and devote the other meetings to discussion of local observations under the direction of one who appreciates the difference between painstaking scientific field work and careless superficial observation.

The injurious element would thus soon be eliminated and the high standard of the study preserved.

Quality in popular ornithology is the need of today rather than quantity.
— W. S.



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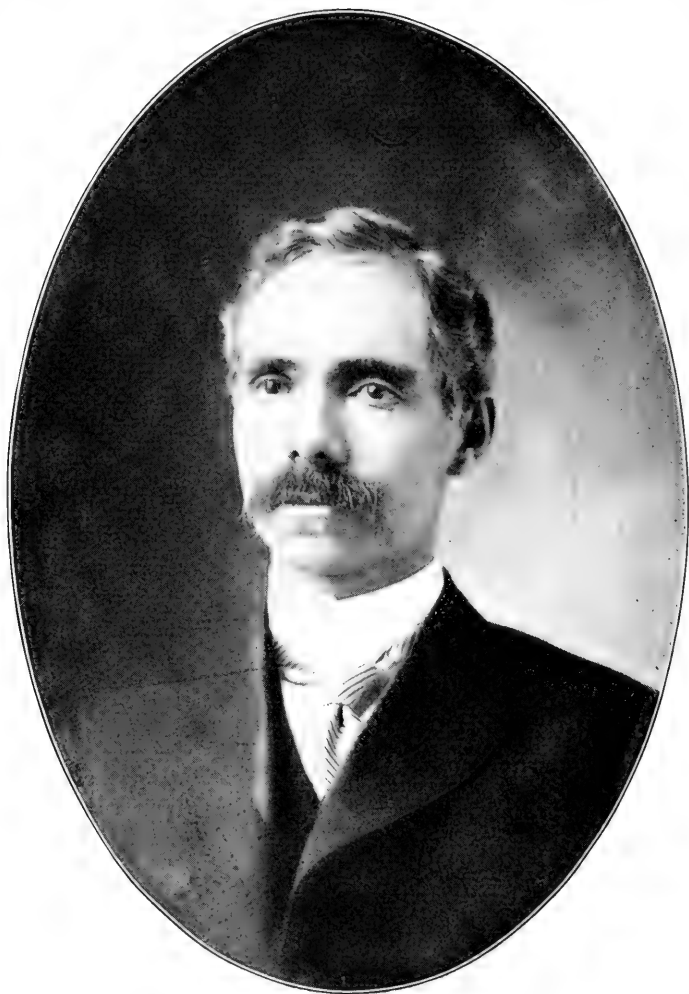
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Yours truly,

Wells W. Cooke.

THE AUK:

A QUARTERLY JOURNAL OF
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APRIL, 1917.

No. 2.

IN MEMORIAM: WELLS WOODBRIDGE COOKE.¹

Born Jan. 25, 1858 — Died March 30, 1916.

BY T. S. PALMER.

Plate II.

MEMBERS of the American Ornithologists' Union who are interested in migration are familiar with the contributions which Middendorff of Russia, Palmén of Finland, Gätke of Heligoland, Harvie Brown of Scotland, and other European ornithologists have made to that puzzling branch of ornithology which deals with the seasonal movements of birds. And they will not hesitate to include among the workers of the first rank in this field one of their own number who year after year labored patiently, persistently, and enthusiastically to raise the veil of mystery enveloping the habits of some of our common birds. In considering migration says Prof. Alfred Newton we "indeed are brought face to face with perhaps the greatest mystery which the whole animal kingdom presents. . . . The flow and ebb of the feathered tide has been sung by poets and discussed by philosophers, has given rise to proverbs and entered into popular superstitions, and yet we must say of it still that our 'ignorance is immense!'"² America's contri-

¹ Address delivered at the thirty-fourth Stated Meeting of the American Ornithologists' Union, Philadelphia, Pa., Nov. 14, 1916. The accompanying plate is from a photograph taken in November, 1904.

² Dictionary of Birds, pp. 549-550, 1896.

butions to the literature of this fascinating subject will compare favorably with those of any other country and the work of Prof. Wells W. Cooke, her foremost student of bird migration, has already received recognition at home and abroad. Although it was not his privilege to journey to distant lands to observe birds, or to spend a half century watching migration at an ornithological observatory like Heligoland, nevertheless he was reared in the midst of the greatest avian highway of the continent and at an early age was attracted by the movements of the winged hosts passing north and south in spring and autumn. He not only improved his opportunities but succeeded in coördinating the efforts of others in collecting data and thus was able to make substantial additions to the sum of knowledge in his special field of investigation.

Wells Woodbridge Cooke, son of Rev. Elisha Woodbridge Cook and Martha Miranda (Smith) Cook, was born in Haydenville near Northampton, Mass., on January 25, 1858.¹ Cooke's father was a Congregational minister who had been brought up by his uncle, Wells Woodbridge, and after whom he named his son. The family included nine children — six girls and three boys; Wells, the fifth child and eldest son, received from his parents a heritage of patience, persistence and quiet force that contributed much to his success in later years. At an early age he was taken to Townsend, northeast of Fitchburg, Mass., and later to Hopkinton, N. H., where the family lived two years. About 1864 when he was six years old he accompanied his parents to Ripon, Wis., where his father had been appointed pastor of the church. Here in the lake region of eastern Wisconsin, Wells' boyhood was spent and here he received most of his education. He early exhibited an interest in natural history and when about twelve years of age he was given his first gun. He at once began to collect the common birds of the neighborhood and made frequent trips to Green Lake a few miles from Ripon in search of specimens. At first he merely mounted the heads and wings on boards and it was some time before he learned to prepare specimens

¹ The year 1858 is an important one in the history of ornithology. It marks the close of the first century of systematic work, which began with the publication of Linnaeus' *Systema Naturæ* in 1758, and the dawn of a new era in American ornithology signaled by the appearance of Baird's great work on North American birds.

according to approved methods. It would be interesting to know what were the influences during these years which moulded his future, what books or what companions directed his thoughts and aroused his enthusiasm in birds rather than in some other line of study. But apparently he has left no record on this point and his reticence regarding personal matters was such that he seldom mentioned his early ornithological studies even to his most intimate friends.

After completing the course in the preparatory schools he entered Ripon College and later studied at the University of Iowa in 1876, but having been taken ill in the following winter was compelled to return home. He again entered Ripon College and in due time graduated in the class of '79 with the degree of A. B., and in 1882 received the degree of A. M. On November 27, 1879, he married Miss Carrie Amy Raymond, daughter of Eusebe L. Raymond and Emily Lucina (Lucia) Raymond, a young lady who had been born and brought up in Ripon and whom he had known for some years.

Immediately after graduation he secured an appointment as a teacher in the Indian schools and was assigned to duty in north-western Minnesota. The next six years were spent in teaching, partly in the Indian Service, chiefly among the Chippewas, Choctaws, and Otoes, and partly in secondary schools, at half a dozen different places in four different States. His first school was on the White Earth Indian Reservation, Minn., just west of Lake Itasca, where he was noting the arrival of birds in the spring of 1881.¹ Here he spent three years although probably not all at one time as he was in Iowa late in 1881. The ornithological results of his residence on the Reservation were embodied in a paper on 'Bird Nomenclature of the Chippewa Indians.'² In the early part of 1882 he was back in Minnesota but the latter part of that year and the spring of 1883 were spent in Jefferson, Wis. Late in the summer he went to the Indian Territory (now Oklahoma) and taught in the Indian school at Caddo in the Choctaw Nation. Here he remained from August 27, 1883, to April 8, 1884, and his observations on birds were summarized in a recent paper on the winter birds of Oklahoma.³ From Caddo he went to Red Rock among the Otoes

¹ Bull. Nuttall Orn. Club, VI, p. 186, 1881.

² Auk, I, pp. 242-250, 1884.

³ Auk, XXXI, pp. 473-493, 1914.

in the northern part of the Territory but was there only a few months when he was stricken with typho-malaria and was obliged to abandon his work. He returned north and staid at Moorhead, Minn., opposite Fargo, N. Dak., while he was recovering from the attack of fever. Here he continued teaching until the following summer when he left for Vermont to enter upon his college work.

The years thus spent in teaching in the Mississippi Valley are important not only because they afforded an opportunity for field work among the birds of widely separated localities but because they mark the beginning of coöperative observations on migration in the United States and the publication of the most detailed annual records of migration for a wide area that have ever appeared. The earlier reports which appeared in 1882 and 1883 brought the author into correspondence with observers in the middle west and gained for him substantial recognition by the American Ornithologists' Union which at its first meeting appointed a committee to coöperate with him¹ and in 1884 elected him an active member of the Union.

How or where Cooke first conceived the idea of coöperative observations on the movements of birds is not mentioned in any of his reports, but it is important to recall that similar work had been undertaken in Europe a few years before. In Germany observations were begun by Blasius, Reichenow and Schalow about 1876,² and in Scotland Harvie Brown and Cordeaux collected reports on the autumn migration of 1879 from light houses on the coasts of England and Scotland.³ In both the German and English reports the observations begin in the autumn and continue through the winter and spring as do those of Cooke's first reports. In a review of the English report Dr. J. A. Allen suggested as early as 1880³ that it would be desirable and not impracticable to establish an ornithological bureau to which observations could be sent and elaborated, and that nowhere were conditions more favorable for systematic work than in the United States. This suggestion was made five years before the plan became an accomplished fact in the organization of the work now carried on by the Biological Sur-

¹ Bull. Nuttall Orn. Club, VIII, pp. 225, 230, 1883.

² Zur Vogelkunde Deutschlands, I Jahresbericht (1876) des Ausschusses für Beobachtungs-Stationen der Vögel Deutschlands, J. f. O., 1877, pp. 278-342.

³ Bull. Nuttall Orn. Club, V, pp. 175-177, 1880; see also Ibid., VIII, pp. 228-231, 1883.

vey. Evidently the dawn of a new era in the study of migration in America was close at hand.

In the winter of 1881-82 Cooke invited the ornithologists of Iowa to send him lists of winter residents and dates of the first arrival of spring migrants. The field of investigation was soon extended to include the whole Mississippi Valley. The reports for 1882 were published in 'Forest and Stream' for October to December, 1882; those for 1883 in the 'Ornithologist and Oölogist' for that year, and those for 1884 and 1885 in the bulletin on 'Bird Migration in the Mississippi Valley' issued by the U. S. Department of Agriculture.

In the autumn of 1885 Professor Cooke entered on a period of college work which lasted 16 years, during which time he was connected with three institutions, the University of Vermont, the State Agricultural College of Colorado, and the State College of Pennsylvania. He went to Burlington, Vt., as a graduate student of chemistry, apparently attracted partly by the presence on the faculty of Prof. A. H. Sabin, under whom he had studied chemistry at Ripon College. In January, 1886, he was employed as a lecturer in the Agricultural College and as State Chemist, and a few months later was appointed Professor of Agriculture in the University. Upon the organization of the Experiment Station early in 1887 he was made Director, a position which he held until September 1, 1893. He was evidently fully occupied with the many details of organization and administration connected with Station work. Of the 39 bulletins published during this time he was the author in whole or in part of 24, on such varied subjects as fertilizers, feeding experiments, insecticides, maple sugar, and testing dairy cows. In addition he prepared the annual reports and a number of short articles or notes on agricultural topics. From an ornithological standpoint the eight busy years at Burlington were the least productive of his life. Beside putting the finishing touches on his migration report he published only one short note in 'The Auk.' In later years he remarked that while he had added one bird to the Vermont list during his residence in the State he had never published the fact, whereas he published several additions to the Colorado list during his stay in that State although none of the additions were based on his own observations.

From Burlington, Cooke went directly to Fort Collins, Colo., where in the autumn of 1893 he took up the duties of Agriculturist at the State Experiment Station. He remained in this position for seven years busy with the varied duties connected with teaching agriculture and attending farmers institutes, but not unmindful of the birds. His experiment station work dealt with problems of forage crops, stock feeding, sugar beets, and dairying. Of the 13 bulletins which bear his name he was sole author of 9 and co-author of 4; four of these publications relate to stock feeding and three each to sugar beets, miscellaneous farm notes, and birds. Conditions at Fort Collins were evidently much more favorable for bird study than at Burlington and the incentive of a new fauna, diversity due to influence of altitude on bird life, and the opportunity for observation during his thousands of miles of travel every year in the course of his station work bore rich fruit later in his 'Birds of Colorado.' A few months after his arrival his first paper appeared and during his residence in the State he published 10 articles on birds in addition to three bulletins on the 'Birds of Colorado.' Two incidents of his Colorado experience also merit mention — a visit to Salt Lake City the most western point he ever reached and a severe attack of typhoid fever in October, 1895, from which he did not fully recover for nearly a year.

At the beginning of the autumn term of 1900 Professor Cooke became connected with the Pennsylvania State College in the capacity of volunteer associate engaged in research work in animal nutrition. The results of this work appeared in a paper on 'The Maintenance Ration of Sheep.' This report was finished in the spring of 1901 and is interesting as the first publication signed 'Wells W. Cooke.' All his previous papers appeared under the name 'W. W. Cooke,' and the change he afterwards explained was made at the beginning of the new century and was consistently maintained, except in his migration papers in 'Bird-Lore.' Thus, even without dates, it is easy to distinguish his 19th century from his 20th century contributions.

On July 1, 1901, Professor Cooke received an appointment in the Biological Survey in the U. S. Department of Agriculture and the remaining 15 years of his life were devoted to work on bird migration and distribution. As Dr. Chapman has well said,

never were man and opportunity better mated,¹ and he entered upon his work with characteristic energy and enthusiasm. His first position, was that of Expert Assistant, but on July 1, 1902, he was made Assistant Biologist, on July 1, 1908, Bird Migration Expert, and on November 1, 1912, Assistant Biologist, with bird migration and distribution as his chief work in all these positions. He undertook an exhaustive examination of the literature of migration and began a bibliography of the subject, but finding it difficult to differentiate between migration and distribution he devoted his attention to both subjects. He introduced the plan of entering each migration record on a separate card and wrote many thousands of cards with his own hand. This monotonous routine labor brought on writer's cramp and although he trained himself to write with his left hand this hand also suffered in the same way and in his later years he could not write more than ten or fifteen minutes without changing from one hand to the other. In 1915 he had the satisfaction of reporting that the number of cards in the migration index had passed the million mark. He naturally took a deep interest in the enactment of the Federal Migratory Bird Law, attended the hearing on the bill before the House Committee on Agriculture, and later as a member of the Biological Survey Committee took an active part in framing the regulations for carrying the law into effect. Outside the office his activities were manifested in various directions. He was an active member of the Biological Society of Washington, and served as treasurer from January 1, 1914, until his death. He also took a very active part in the work of the Audubon Society of the District of Columbia, serving on its executive committee, as one of the teachers in the bird classes, and as the principal leader on the spring outings organized to study birds in the field. He aroused much enthusiasm in the members in making migration notes, and collected material for two comprehensive papers on the migration of local birds.

Of Cooke the man it is unnecessary to speak except for the benefit of those who never had the pleasure of meeting him. In stature he was somewhat below medium height and rather slight. Although somewhat frail in appearance, at least in his later years,

¹ Bird-Lore, XVIII, p. 189, June, 1916.

he was very active, fond of outdoor exercise and could walk farther and with less fatigue than many a man more robust and apparently more athletic. In manner he was quiet, somewhat serious, but always genial and willing to assist his friends or acquaintances. He was wonderfully patient not only in imparting information but in accepting petty annoyances. In certain respects he had a keen sense of humor and did not hesitate to recount incidents which must have been anything but amusing to him at the time. A situation created by the editorial blue pencil which made him say something very different from what he intended, or which consigned his manuscript to cold storage for a year or two, a mishap on an outing resulting in an accident in a boat at night, or his efforts to hold the attention of an audience in a carefully prepared lecture when the boys in the front row were chiefly interested in projecting their silhouettes on the screen, were all described for the benefit of his friends as freely as any other information at his disposal. He had a large and constantly increasing circle of friends. A new face in the office, whether of messenger, clerk or field assistant, always aroused his interest and he usually made a point of becoming acquainted with the new comer at the first opportunity. He was also interested in the personal history of his friends, and would make special inquiries to satisfy his curiosity, but it was done so quietly that hardly anyone would suspect that he had more than a casual interest in the individual. For such details his memory was remarkable. He was fond of classical music and enjoyed a good concert or opera almost as much as he did tramping in the woods. He always found congenial spirits among those who were fond of being outdoors whether in tramping, botanizing or observing the birds. Much of his spare time was spent in the country summer and winter, exploring the vicinity of Washington in search of birds, ferns, or new walks. Few residents of the capital knew the surrounding country better than he and he took a prominent part in organizing the spring outings of the Audubon Society, the walks of the College Women, and occasionally in acting as leader on the outings of 'The Wanderlusts,' an active walking club of the city. It was his custom to spend several afternoons and evenings each week at 'The Wickiup,' at Viresco, on the Virginia side of the Potomac, a few miles above Washington. Here on a three-

acre tract of land belonging to his sister, a commodious one room cabin was built with a cheerful open fire place and a comfortable porch, where with his sister and daughter he entertained informally but with unusual hospitality several hundred of their friends a few at a time in congenial groups. Here he brought together a collection of living ferns of the District practically complete so far as local species were concerned, and here and on an adjoining farm he made his first bird census in 1911. The Wickiup will long be remembered not only by those who have seen it, but also because of its association with certain phases of his ornithological work. In 'Bird House Tenants'¹ he has described his failure to induce Purple Martins to take up their abode in the house erected for their special benefit, and in the bird census reports² he refers to his first experiments at this place where the ideas were gained which later were embodied in the instructions sent to observers who coöperated in the first general census.

Cooke was an indefatigable worker and his interests extended into several distinct fields. The list of his ornithological contributions prepared by himself includes about 200 titles, but no list is available of his many publications on the branches of agriculture to which he devoted attention. It is impossible at this time to give a bibliography of his publications on birds or to attempt more than a brief reference to some of the more important papers. His first article appeared in 1881,³ and his last in 1916,⁴ within a day or two of his death. During the 35 years of active work his chief contributions were made to the subjects of distribution, bibliography, and migration.

In distribution his most important contributions are Part 2 of the bulletin on 'Bird Migration in the Mississippi Valley' and his 'Birds of Colorado' with three supplements,⁵ bringing the informa-

¹ Bird-Lore, XV, p. 112, 1913.

² U. S. Dept. Agr., Bull. No. 187, pp. 2-4, 1915; Bull. No. 396, pp. 15, 17, 1916.

³ Bull. Nuttall Orn. Club, VI, p. 186 (A brief note on the Least Bittern in Minnesota).

⁴ 'Labrador Bird-Notes,' Auk, XXXIII, pp. 162-167, and a note on 'The Type Locality of *Uria l. troile*,' Ibid. p. 196. Mar. 31, 1916; 'Migration of North American Birds' (Titmice), Bird-Lore, XVIII, p. 97, Apr. 1, 1916. Two posthumous publications appeared later in the year—a note in 'The Auk' in July and his second bird census report in October.

⁵ Colo. Agr. Expt. Station, Bull. No. 44, 1898; Ibid. No. 56, 1900; Auk, 1909, pp. 400-402.

tion down to 1909. In the 12 years between the appearance of the original bulletin and the third supplement on the birds of Colorado, the number of species credited to the State was increased from 363 to 397 and the number of those breeding from 236 to 248. Early in 1912 appeared W. L. Sclater's 'History of the Birds of Colorado,' in which the total number of species was given as 392 (including 13 not given by Cooke) and the number of those breeding reduced to 225. Cooke promptly published a paper on 'The Present Status of the Colorado Check List of Birds,'¹ in which he analyzed the differences in the two lists, accepted most of Sclater's eliminations from the breeding list but concluded that the total number of species should be increased to 403, to which might be added 7 more, the status of which was still in doubt. Important in this connection are his papers on 'The Winter Ranges of the Warblers'²; 'Some Winter Birds of Oklahoma'³ based on his own observations in 1883-84, and 'Labrador Bird Notes'⁴ based on the field notes of Clarence Birdseye. He has also left in manuscript a detailed list of the 'Birds of New Mexico.' The long series of migration articles in 'Bird-Lore' and in his bulletins on various groups of birds published by the Biological Survey contain a wealth of data regarding the distribution of the species mentioned. Members of the committee in charge of the preparation of the Third Edition of the 'Check-List of Birds' published by the American Ornithologists' Union in 1910, will recall that he devoted an immense amount of time and energy to the preparation of data which were incorporated in the revised statements of the distribution of the species.

In bibliography his first important work was in connection with the 'Birds of Colorado.' The original bulletin contained 182 titles and the number was increased in 1900 to 225. In the Third Supplement he stated that the additional titles for 1900-1909 numbered 118 and the 'less important titles' omitted in previous lists 91, thus making a total of 434, although he gave only 61 of the additions in full. Sclater's bibliography brought down to Decem-

¹ Condor, XIV, pp. 147-153, July 1912.

² Auk, 1905, pp. 296-299.

³ Ibid., 1914, pp. 473-493.

⁴ Ibid., 1916, pp. 162-167.

ber, 1910, included 294 titles, the difference of 140 being accounted for mainly by the omission of minor references. These apparent discrepancies are significant in illustrating his method of work. With Cooke a record was a record and a title a title, however unimportant, and in consequence his lists seem longer than those of others covering the same field. In the preparation of the 'Ten Year Index to the Auk,' 1915, the basis of the work was a series of cards which he had made in connection with the indexes of the Biological Survey, and as secretary of the committee he performed the greater part of the labor in preparing them for publication. An immense amount of bibliographical material was collected in the course of his work on bird migration, but unfortunately the bibliography of migration to which he had devoted much time and labor was never brought to completion.

Of his publications on migration it is difficult to speak adequately in a few lines. Prof. Alfred Newton says: "A very praiseworthy work was performed by Prof. W. W. Cooke, whose 'Report on Bird Migration in the Mississippi Valley' in 1884 and 1885 . . . was edited by Dr. C. Hart Merriam. Some of the facts herein adduced are highly suggestive, but it must be remarked that on several points there is a difference of opinion between the author and the editor."¹ Fortunately the editor's opinions are carefully separated from those of the author and the reader can thus compare both statements and reach his own conclusions. Doctor Merriam himself says in the preface: "I feel no hesitancy in expressing the belief that the present report is the most valuable contribution ever made to the subject of bird migration." The later contributions on migration are published in two general series of papers in 'Bird-Lore' and in the bulletins of the Biological Survey. The 'Bird-Lore' articles extend over a period of twelve and a half years from December, 1903 to April, 1916, and contain tabular summaries of records of most of the migratory land birds, including the warblers, thrushes, flycatchers, vireos, sparrows and kinglets. The Survey bulletins on distribution and migration include one report on the warblers (1904) and five on water birds and waders: ducks, geese and swans (1906); shorebirds (1910); herons (1913);

¹ Dictionary of Birds, Migration, p. 562, 1896.

rails (1914); and gulls (1915). A report on the terns was finished but not published and one on the auks and grebes was almost completed. Thus Cooke has published on most of the migratory birds of North America except the albatrosses, petrels, pelicans, cormorants, pigeons, hawks, cuckoos, goatsuckers, swifts, and hummingbirds. Important also are his two articles on migratory birds in the 'National Geographic Magazine' in 1911 and 1913, and his two papers on 'Bird Migration in the District of Columbia.'¹ In the latter he has worked out with great precision from a long series of observations the average dates of arrival and departure of the various migrants.

During the progress of his investigations he published from time to time a few general papers on the broader questions of migration and on his methods of work. In an article on 'The Effect of Altitude on Bird Migration'² he compared the records from Asheville and Raleigh, N. C., and showed the marked differences in avifauna and time of arrival caused by a difference of 1700 feet in the elevation of these two places in the same State. In 'Routes of Bird Migration'³ he advanced his theory of 'parallels of migration'; in a paper entitled 'Many Eyes are Better Than One Pair.'⁴ he emphasized the importance of coöperative work, as shown by observations in the vicinity of the National Capital; and in a note on 'Averaging Migration Dates,'⁵ he explained his apparently arbitrary method of selecting dates. Some years ago he published 'Some New Facts about the Migration of Birds'⁶ accompanied by maps showing the wonderful migration route of the golden plover, and the variation in the speed of the robin during migration. Twelve years later he revised and expanded this paper in his bulletin on 'Bird Migration,'⁷ which contains his latest views on the subject. In this connection it is interesting to note that while he declined to accept Palmén's 9 'Zugstrassen' (migration routes) for Europe and Asia, he himself outlined no less than 7 'principal migration routes'

¹ Proc. Biol. Soc. Wash., XXI, pp. 107-118, 1908. Ibid., XXVI, pp. 21-25, 1913.

² Auk, 1904, pp. 338-341.

³ Auk, 1905, pp. 1-11.

⁴ Auk, 1907, pp. 346-348.

⁵ Auk, 1908, pp. 485-486.

⁶ Yearbook U. S. Dept. Agr. 1903, pp. 371-386.

⁷ U. S. Dept. Agri. Bull. No. 185, pp. 1-47, 1915.

for North America (p. 8). While he rejected Middendorff's term '*isepipteses*' proposed in 1855 to denote lines of equal flight or simultaneous arrival, he adopted precisely the same thing in his maps prepared for the use of the Committee on Regulations on Migratory Birds in 1913, and published them as '*isochronal lines*' in 1915.¹ Although he paid scant attention to the work of banding birds, only a few weeks before his death he had occasion to alter materially his views regarding the routes of certain species of ducks on account of data derived from this source. But it is greatly to his credit that he was ever ready to modify his opinions in the light of new data or reject an old hypothesis which was made untenable by new and more complete records.

Cooke's principal contributions to ornithology were undoubtedly his great work in collecting, arranging and preparing for use the immense mass of records concerning the migration and distribution of North American birds, in giving instruction on these subjects through publications, lectures, and personal advice, and in stimulating interest and coöperation in bird study and especially in bird migration — in short in the application of existing information to the actual solution of certain ornithological problems.

Suddenly at the opening of the spring of 1916 he was called upon to lay aside his work. He had recently passed his 58th birthday and apparently had several years of active and useful work ahead. But just at the height of his activity and usefulness when he was hoping to see the early completion of several projects in which he was interested, his hand was stayed and the pen which had long been overworked was laid aside forever. Rarely in the annals of ornithology has the advent of what has been called the greatest adventure in life come under more appropriate circumstances. On Monday, March 20, it was my privilege to accompany Professor Cooke and his daughter on what proved to be his last outing. Swans had been reported on the Potomac just below Alexandria near Jones Point where about a dozen of the stately birds were found feeding and swimming about some distance from the shore. Professor Cooke was greatly interested in them and remarked that it was many years since he had seen his last live wild swan in the

¹ Bull. 185, pp. 36, 38, 42.

upper Mississippi Valley. He also examined with much interest the historic stone marking the southern corner of the District of Columbia which he had never happened to see before. The next afternoon he attended a concert, and Wednesday morning while at a conference in the Biological Survey he complained of feeling ill, and excusing himself went home. So quietly did he leave that few of his fellow workers in the office realized that he had gone. The following Monday he was removed to George Washington Hospital and on Thursday morning March 30, 1916, at 1 A. M. he died of pneumonia after an illness of only eight days. Funeral services were held on Sunday at the First Congregational Church and were attended by several hundred friends and acquaintances. The exercises at Glenwood Cemetery where the casket was placed temporarily in a receiving vault were attended only by representatives of the American Ornithologists' Union, the Audubon Society, the Biological Survey, and a few friends. It was a cold gray afternoon, and as the little circle gathered about the casket and the reading of the committal service was begun, a bluebird uttered its plaintive note, a flicker called from a neighboring tree, and a mockingbird joined in and sang throughout the reading. What more appropriate rites for a true lover of birds! A few days later he was cremated and his ashes transferred to Ripon, Wis., for burial beside the remains of his wife who had died ten years earlier. Here amid the scenes of his childhood and early manhood where he first began to study birds, another ornithological shrine is now located at the last resting place of Wells W. Cooke, "Father of coöperative study of bird migration in America."





1. GRAND ROMAINE RIVER, SHOWING HUDSONIAN VALLEY, ARCTIC BARRENS AND MOUNTAINS.
2. SHEKATIKA RIVER AT THE HEAD OF SHEKATIKA INLET.

IN AUDUBON'S LABRADOR.

BY CHARLES W. TOWNSEND, M. D.

Plates III-V.

EVER since my boyhood when I read Audubon's 'Birds of America,' with its frequent references to the Labrador coast, I have longed to follow the great ornithologist's footsteps in those regions. In 1906, on a visit to eastern Labrador, I had a glimpse of Bradore and Blanc Sablon the termination of Audubon's trip, and in 1909 and 1912, I reached, from the west, the starting point of his trip at Natashquan and looked eagerly into the promised land. After another interval of three years, I was able, in 1915, to carry out my longed for plan and explore the intervening two hundred and fifty miles — *Audubon's Labrador.*

It was on June 6, 1833, that John James Audubon, the great ornithologist, sailed from Eastport, Maine, on his long contemplated trip to Labrador. With him, as assistants in his work of procuring specimens, were five young men, all between eighteen and twenty-one years of age. These were his son, John Woodhouse Audubon, the father of Miss Maria R. Audubon, who has preserved for us in 'Audubon and His Journals,' the valuable records of her grandfather's life; William Ingalls and George C. Shattuck, afterwards physicians of prominence in Boston, both of whom in their ripe old age, I was privileged to know; Thomas Lincoln and Joseph Coolidge.

Under the command of Captain Emery, the top-sail schooner *Ripley* of one hundred and six tons burden, carried this interesting company through the Straits of Canseau, touched at the Magdalen Islands, passed the famous Bird Rock, white as snow from the vast multitude of birds, and, on June 17, reached the coast of the Labrador Peninsula, at the little port of Natashquan or American Harbor, as it was then called. The young men, incited by the enthusiasm of their leader, were all eagerness to explore the new and strange region, a land of bog and rock, of dwarfed vegetation and lingering snowbanks. One of the first fruits of their

efforts was the discovery of a hitherto unknown sparrow, which was named by Audubon, Lincoln's Finch, after Tom Lincoln who brought it down with his fowling-piece.

At Natashquan, Audubon saw the Montagnais Indians, who had just come out of the interior for their annual trading at the Hudson's Bay Company's Post. He also met Captain Bayfield of the *Gulnare*, who was laboriously mapping the coast and whose chart, far from perfect, is the one on which the charts of today are based.

Delayed by repeated storms, it was not until June 28th that the *Ripley*, cleared from Natashquan, touched at the islands near Old Romaine crowded with breeding water-birds, and came to anchor in the wild and desolate harbor of Wapitagun. After a study of the great bird rookeries of this region, the *Ripley* took to sea and, by good chance, stumbled into that wonderful rock-enclosed harbor at Little Mecattina Island, now known as Hare Harbor. The ruggedness of the rocky hills, the arctic character of the vegetation, the presence of snow banks and the frequency of gales and cold rain storms, chilled the southern blood of Audubon, who sighed for the genial climate of his native Louisiana. Yet he persevered in his work of adding to our knowledge of the little known northern birds, often spending eighteen hours a day at the drawing table. Cold and wet, assailed by vicious mosquitoes and flies, sometimes homesick, often seasick, worn out by his long hours of labor, he exclaimed, "I am no longer young!" His worst handicap, however, was the pilot that was taken in by Captain Emery to guide them in this intricate coast. This man was so ignorant of the region that he was unable to sail through the many safe and quiet waterways among the islands, but put to sea between each harbor and subjected the whole company to all the perils and discomforts of the stormy Gulf.

From Little Mecattina, they sailed to Baie de Portage, now known by the more prosaic name of Mutton Bay. From here, Audubon visited in a small boat, a trapper and trader at Mecattina Harbor, Pierre Micheaux by name, as well as Samuel Robertson at Sparr Point.

Setting sail on July 26, he hoped to call at "Chevalier's Settlement" at the mouth of the St. Paul River, but unfavorable winds, stormy seas and the ignorance of the "ass of a pilot" prevented,

and the *Ripley* continued on to Bradore Bay. Here Audubon called on Mr. Jones, an interesting character, the foremost man of the place and visited Perroquet Island, where Puffins, or Perroquets as they are called, bred in countless thousands. He extended his explorations to Blanc Sablon and succeeded in finding the nest of a Horned Lark, long sought in vain. He also secured a pair of Black Gyrfalcons called by him *Labradorius*.¹ He refers to the now extinct Labrador Duck and saw many hundreds of Esquimaux Curlew.

On August 11, Audubon turned homeward by way of Newfoundland. His arduous trip was well worth all its hardships. He brought back seventy-three bird skins, as well as a large collection of plants and other objects of natural history. He observed or mentions some ninety-three different species of birds and recorded much that was hitherto unknown. Lincoln's Sparrow was discovered and described and twenty-three drawings of the birds were completed or nearly completed. He worked hard and had been well rewarded.

With my companion, Mr. Harold St. John, botanist, both of us for the time, members of the staff of the Canadian Geological Survey, I left Montreal on June 24, 1915, on the S. S. *Cascapedia*. My old friend Captain Hearn was in command and he had his usual stock of sea tales and witty sayings. Napoleon P. Comeau, the veteran naturalist of Godbout, an authority on the life history of our salmon and a recognized ornithologist, added to the pleasure and interest of the trip. Late at night, on June 27th, we landed at Esquimaux Point, where we found our pilot, Captain A. Edmond Joncas and his schooner, the *Sea Star*, and also my friend M. Johan Beetz, who had invited me to stay with him at his home in Piashte Bay.

The next morning, leaving Mr. St. John to get settled on the *Sea Star*, I sailed in the little mail schooner with M. Beetz and that afternoon arrived at Piashte Bay, where I had the pleasure of spending five delightful days with him and his charming family. We explored the neighboring land and waters and found an abundant

¹ In the original plates the Black Gyrfalcon, called *obsoletus* by Gmelin in 1788, is figured; while in 'The Birds of America,' although the details of the capture of the birds in Labrador are given, the bird is described and figured as the Iceland Gyrfalcon.

bird-life. Of warblers, the Black and White, Tennessee, Yellow, Myrtle, Magnolia, Black-poll, Yellow Palm and Wilson's were all in full song as well as a few Water-Thrushes, Maryland Yellow-throats and Redstarts. Yellow-bellied and Olive-sided Flycatchers were there and White-throated, White-crowned, Lincoln's and Swamp Sparrows and Juncos were common. Eiders with their dusky, downy broods and Great Black-backed Gulls with their speckled young abounded in the bay. On the river were broods of Black Ducks and I found a nest of a Red-breasted Merganser or "*Bee-sic*," with eight eggs under some spruce bushes and Labrador tea.

I had also the great pleasure of examining with M. Beetz his interesting collection of birds and found in it no less than six species new to the list of birds previously recorded from the Labrador Peninsula. These were Kumlein's Gull, European Widgeon, Lesser Scaup, Killdeer, Red-winged Blackbird and Cliff Swallow. M. Beetz also showed me specimens that were intermediate between the Northern and American Eider.¹

On July 1, Mr. St. John arrived in the *Sea Star* and the next day we reached Natashquan, formerly called American Harbor, the starting point of Audubon's trip on the Labrador coast. This was familiar ground to me and we stayed at the house of the Captain's brother, Richard Joncas, the head of the "Labrador Fur Company." Here, like Audubon, we were detained by unfavorable weather, but the five days were well spent. Like Audubon also, I visited the Montagnais Indians at the mouth of the Great Natashquan River. They had recently come out of the interior for their annual religious festivities and for trading. I also followed the great ornithologist's footsteps up the shores of the Little Natashquan River as far as the falls. It was at Natashquan that Tom Lincoln shot the sparrow that Audubon recognized as new to science and named after this young man. "Three cheers," he writes in his Journal, "were given him when, proud of the prize, I returned to the vessel to draw it." In the plate he has drawn, the pale laurel, the cloudberry or bake apple and the Labrador tea, plants which, he says, were gathered by Tom Lincoln for the purpose.

¹ See Auk, 1916, XXXIII, pp. 286-292.

The song of Lincoln's Sparrow was to be heard everywhere. Audubon speaks of "the sweet notes of this bird as they came thrilling on the sense, surpassing in vigour those of any American Finch with which I was acquainted." It is a song of considerable beauty and great range of theme. At times I have recognized the general character of the melody of the Song Sparrow, at times the jingling notes of the Winter Wren, at times the impassioned warble of a Purple Finch. The song has generally a loud ringing character like the music of silver sleigh bells, with the interpolation of fine trills and deep flutelike notes. One bird I especially loved at Piashte Bay often ended his song with *Oh mieux* and occasionally followed it with an almost inaudible trill which sounded as if he were drawing in his breath after the supreme effort. It is an interesting and cheerful song, one which I always listened to with great pleasure.

The elusive Tennessee Warbler was really abundant here and in full song, and on several occasions it so far forgot its shyness as to appear in plain sight. It is a curious fact and possibly points to the recent increase of this bird, that Audubon, who knew it in the south, did not find it here, for he says in his 'Birds of America,' "Of its migrations or place of breeding, I know nothing."

I was glad to find a Piping Plover on the beach. Mr. Bent and I had seen a pair there in 1909 and I found a pair with young in 1912; this is apparently its most northern breeding point on the coast. I saw a Red-tailed Hawk as dark as the one I saw on the Little River of the Bear in 1912. I also saw a bittern that like the specimens in M. Beetz' collection, looked dark. I was unfortunately unable to secure either of these birds, which appear to illustrate the dark tendencies in plumage of Labrador birds.

The Fourth of July was hot for these parts, 62° in the shade at noon, and we found the last year's mountain cranberries or *graines rouges* still on the vines very refreshing. The botanical products of this region are most interesting but can only be lightly touched on here. I have referred to them in my previous Labrador papers. It is evident both from the vegetation and the birds that Natashquan is the boundary on the coast between the Hudsonian and Canadian regions to the west and the Subarctic coastal strip to the east. Another interest of the place was the Catholic Mission

Church, presided over by two Eudist fathers, Père Garnier, and Père Gallix, whose hospitality and interesting converse I greatly enjoyed.

On July 7, the wind was favorable and we set sail in the *Sea Star*. She was but forty feet long and seventeen tons burden, while Audubon's *Ripley* was over a hundred feet long and a hundred and six tons burden. The small size of our boat gave us an advantage, however, and we were most fortunate in our Captain, A. Edmond Joncas, a charming and interesting man and one who had navigated these intricate waters for over forty years and knew them as only one to the manner born could know them — for the charts are all but useless. I had brought with me a copy of Audubon's 'Labrador Journal,' which he read with great interest and not only recognized all the harbors mentioned but knew the descendants of the very people that Audubon met. We were indeed fortunate in our pilot, far more fortunate than Audubon.

From Natashquan to Grand Romaine, a distance of over fifty miles, is the only exposed strip on the coast, unprotected by islands, and we experienced the full sweep and heave of the stormy Gulf. We anchored that night at Grand Romaine, and at once visited the Indian encampment at the Hudson's Bay Post, where we were greeted by an outrush of Indian dogs, while the Indians, on the contrary, disappeared within their tents. By the judicious use of plug tobacco and by the aid of an interpreter, I was able to get some photographs of this interesting and picturesque people. The men wear their black hair cropt straight around their necks, while the women tie theirs up in hard round knots over their ears. Both sexes wear colored handkerchiefs about their necks and brilliantly variegated stockings, and mocassins or skin boots. The headgear of the women is made of red and black broadcloth, shaped like a classical liberty cap, with an embroidered band. Many of the younger men and women are handsome, with clear olive complexions and clean-cut features.

The view over the valley of the Romaine River with its thickly crowded spruce forest to the barrens or tundra, dotted with lakes and lakelets beyond, and the distant range of low mountains, is a characteristic one of this region. Black-poll Warblers were common in the stunted thickets, a brood of Golden-eye Ducks was dis-

porting itself in a pool and a pair of Pigeon Hawks attacked me fiercely in a sheltered valley where the trees were of larger growth.

On the ninth, we managed to reach the harbor of Old Romaine, a few miles down the coast and took refuge from the gathering storm which soon burst on us with great fury and prevented our departure for five days. It was somewhere in this neighborhood that Audubon made a brief exploration of one of the islands and found "two eggers just landed and running over the rocks for eggs." Much to my surprise, I found in one of the little Hudsonian islands of stunted spruce and fir and larch surrounded by arctic bog, a Maryland Yellow-throat in full song. Tree Sparrows were also nesting here and Horned Larks had their first brood on the wing and were singing and mating for the second brood. The Subarctic coastal strip is here of much larger extent than at its beginning at Natashquan.

Great Black-backed Gulls, with their interesting ways and varied conversational notes were our constant companions; their nests and downy young were distributed over the islands. Double-crested Cormorants were continually flying back and forth and a few Caspian Terns were to be seen. Audubon recorded these as Cayenne or Royal Terns. Frazar also found them here in 1884 and Mr. Bent and I saw one at the mouth of the Natashquan River in 1909. The Captain recognized the bird as "*le grand esterlette*," but failed to find for us their breeding place.

On July 14, we were at last able to get off and shaped our course for Audubon's first stopping place at Wapitagan. On our way we passed Audubon Island, so named doubtless, by Captain Bayfield in 1833, and we lay to at the mouth of Coacocho Bay at Outer Island, which was crowded with seabirds. A few great Black-backed Gulls flew about but every inch of the summit of the small rocky island seemed occupied by Double-Crested Cormorants and Murres. Most of the adults of the former species left as we advanced up the rock with cameras levelled and we soon found ourselves among the great nests of this species filled with young calling for food. Murres were everywhere about us and slow to take flight. The bare surface of the rock was covered with their eggs,—we counted one hundred in a space ten feet square,—but nearly all were befouled with the chalky, slimy excrements that covered every-

thing. The Cormorant nests, great basket affairs nearly two feet across and from three inches to a foot in height, were made of weed stalks intermingled with dry grass and sea weed, branches of curlew berry vine, spruce or fir. Many of the nests, although much soiled with the droppings of the bird, had some decoration in the form of a feather or two or a fresh green branch. A few of the nests contained eggs but in most of them were three young, sometimes four or only two. When small, the young were entirely destitute of down and were of the color and appearance of a black rubber doll. The larger ones from a foot to two feet long, were covered with a black woolly down suggestive of a toy black lamb. They were indeed weird objects as they thrust out their long snake-like necks and small heads. Their naked throat sacks, of a pale yellow color, tinged with pink, distended and quivered as they constantly called in hoarse, beseeching tones for food.

The Murres, or Marmettes, as they are called on the coast, stood about in crowds and anxiously made way for us, walking or running along erect, with legs apart in a comical manner as they waved their short paddlelike wings to aid them in balancing. In their anxiety and nervousness, they frequently fell over the Cormorant nests and sadly stained their white shirtfronts and often, in their attempts to rise on the wing, they would sprawl head foremost down the rocks, bounding from ledge to ledge. Ringed Murres were not uncommon and I came upon one group of fifteen or twenty together of this form or species, as it perhaps deserves to be called. There were no Brünnich's Murres.

We calculated there were about 1200 adult Double-Crested Cormorants nesting on the island and 2000 Murres. The Murres, although silent on the rock, uttered curious sounds as they flew, and, when they collected in groups on the water, their combined voices produced a long-drawn, moaning wail. At times it was a sharp snarl, at times it resembled the plaintive bleating of a forlorn lamb.

We sailed on and soon found ourselves under the cliffs of Cape Whittle, which rise from deep water to a height of about two hundred feet. The red rocks were painted white in places by cormorant droppings, but only fifteen or twenty nests were to be seen where up to a few years ago they were to be counted by hundreds.



1. DOUBLE-CRESTED CORMORANTS AND MURRETS ON OUTER ISLANDS,
COACOACHO BAY, CANADIAN LABRADOR.
2. DOUBLE-CRESTED CORMORANTS AND MURRETS ON GULL ISLAND OFF
CAPE WHITTLE.



Among the birds that flew away, I saw only one Common Cormorant. Fishing schooners for years have been in the habit of sailing close to the cliffs and the men have discharged their guns at the poor birds for the brutal pleasure of seeing them fly off in terror or fall wounded into the sea.

At Gull Island, off the Cape, we found an even larger nesting colony of double crested Cormorants than at Outer Island and Murres were also abundant. That afternoon we sailed into the harbor of Wapitagun, so graphically described by Audubon in his history of the Razor-billed Auk. Wapitigun is an appropriate name for this region, as it is the Montagnais for Cormorant. On shore, which is entirely destitute of human habitation, I found a pair of Red-throated Loons in one of the lakelets,—about fifty yards long,—of the barren. They rose into the air at my approach and deserted their son and heir, who, in a coat of light brown down was vigorously swimming about his native pool. Mr. W. L. McAtee¹ has recently called attention to this ability of the Red-throated Loon to spring into the air from calm water, an accomplishment that is necessitated by this habit of nesting on the edges of small pools. A Loon would not have been able to leave this small pool on the wing unless a strong breeze had been blowing.

I also found a Least Sandpiper that rose in the air like a mechanical toy, sailed in irregular circles twenty to fifty yards above the bog, with wings curved down and back, and emitted at frequent intervals a short trill almost as finely drawn as that of a cricket. The bird was in the air for five minutes by the watch and continued to trill after he had reached the ground. Here he was at once obliterated, for his streaked brown back was next to invisible in the bog. He continued trilling as long as I was within ear-shot and even followed me repeating his simple nuptial song. Horned Larks and Pipits were common and the water ways abounded in Razor-billed Auks and Black Guillemots.

The next day, we reached the little harbor of Seal-Net Point, also known as Point au Maurier. Near here I was so fortunate as to find a breeding colony of Ring-billed Gulls, some five hundred in

¹ Auk, 1916, XXXIII, p. 75.

number. Audubon found the birds on the coast in 1833 and Frazar in 1884, but aside from these records, very little was known of this interesting bird in Labrador. The nests thickly scattered among the rocks and vegetation of a small island, were made up of neatly arranged dried grass and weed stalks and moss and feathers. Some of them contained one, two or three eggs, some contained downy young and some were empty.

Derby Bay, thickly dotted with islands, proved well worth exploring. There were but few Eiders and Great Black-backed Gulls nesting, but numerous Razor-billed Auks and Black Guillemots. The last named were courting,—swimming about excitedly in small groups and dipping their heads nervously. A couple would circle about each other, their mouths wide open so as to display the bright scarlet lining. Occasionally, the excited birds bobbed or bowed towards each other and dabbed with their bills. Their tails were cocked up and their red feet showed plainly in the water. From time to time they emitted hissing, whistling notes.

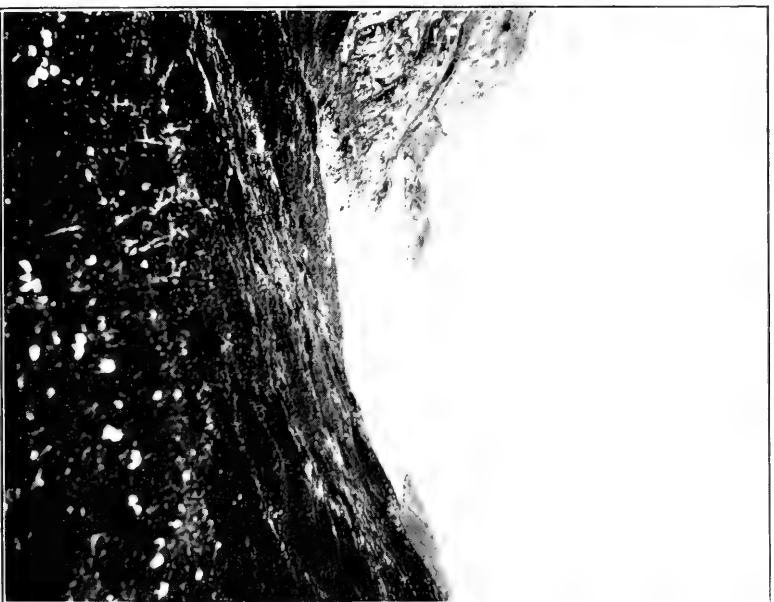
On July 18, we reached Harrington, where is situated the westernmost of the chain of hospitals established by Dr. W. T. Grenfell. It was here we recorded the highest temperature on the trip, 68° in the shade and it was reported in the village to have reached the oppressive figure of 72°. The average temperature during the trip was between 50° and 60° Far.

Hare Harbor in Little Mecattina Island was our next port of call. In this "bowl," as in Audubon's day, Ravens were flying about the cliffs which rise sheer from the water. It is a wild and picturesque region. From there before "a stiff southwest breeze" Audubon sailed thirty-three miles to Baie de Portage in five hours. We had half a gale from the same quarter, and were driven across, under nothing but a reefed foresail in three hours.

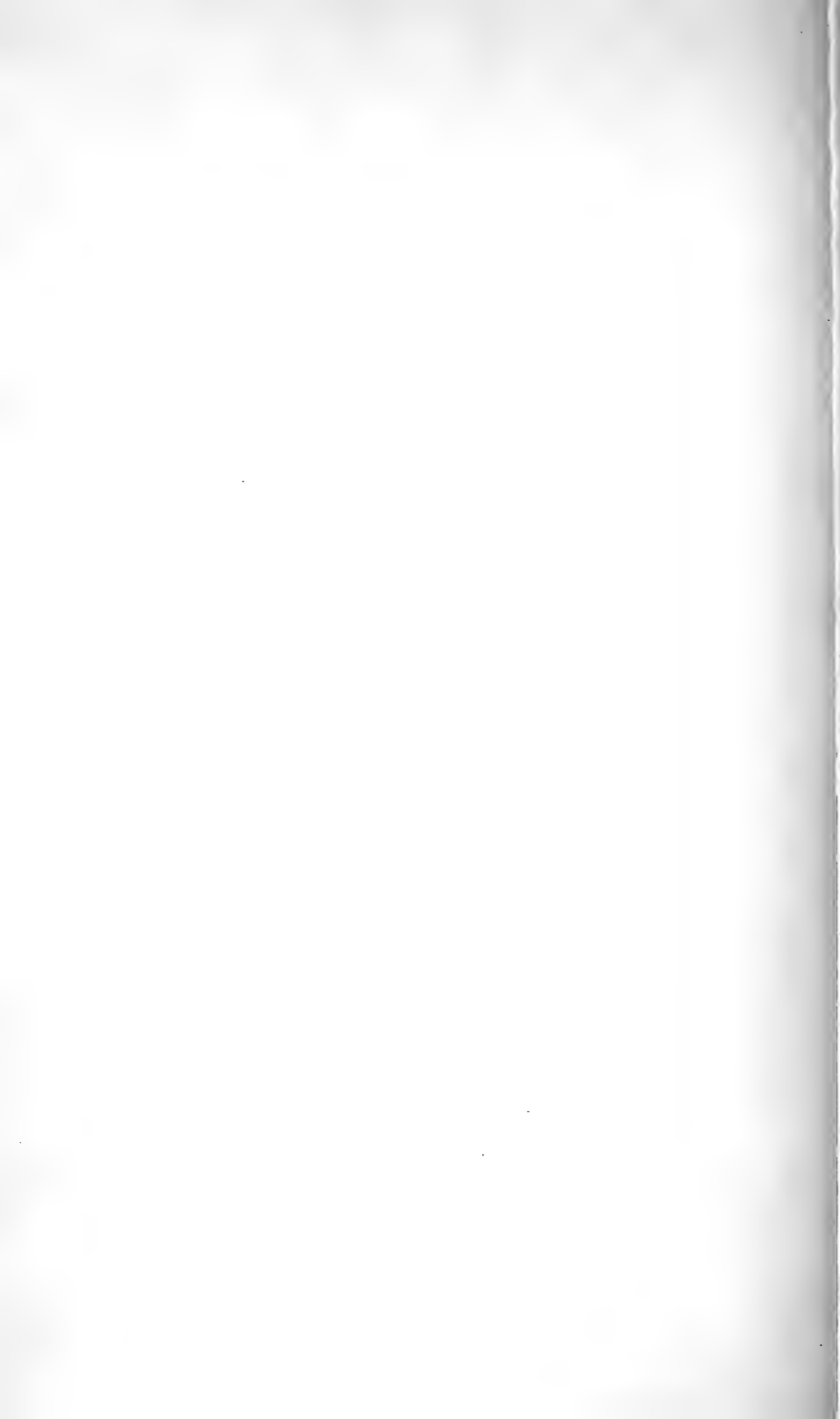
From Baie de Portage or Mutton Bay, we followed Audubon's footsteps into Big Mecattina Harbor, where the grandson of his French seal catcher still lives and to Sparr Point where I had the pleasure of finding Samuel Robertson the 3rd, surrounded by his Eskimo dogs and read to him on the 20th day of July, 1915, Audubon's account of his visit to his grandfather at the same place on July 22, 1833. There had been very little change here in the general conditions of life during all these years.



1. RING-BILLED GULL'S NEST AND EGGS, SEAL-
NET POINT.



2. HARE HARBOR, AUDUBON'S "BOWL," LITTLE
MECATTINA ISLAND.



It was a beautiful day as we sailed on over an emerald ocean of such clarity that we could see the bottom at several fathoms depth and soon found ourselves sailing northeast straight in among a maze of islands. After a passage of five miles through a waterway, a mile broad, we turned east and entered the eighteen mile passage between the islands and the shore, known as La Petite Rigolette. Audubon had wished to see something of this coast "crowded with islands of all sizes and forms, against which the raging waves break in a frightful manner," but his pilot was afraid to venture in and they sailed on, sadly buffeted over the turbulent Gulf as far as Bradore Bay.

Far different was our sail through the Rigolette which resembled a quiet inland river and finally debouched into a land locked basin over five miles in diameter, an inland lake with rocky semi-mountainous sides at the mouth of the great River St. Augustine. The waters here were comparatively birdless, for the Indians and fishermen,—the latter provided with motorboats,—were doing their deadly work. I found plenty of ornithological interest, however, on shore here and at Sandy Isle. At the latter place, a Black Duck in her attempts to draw me away from a reedy pool where her young were hidden, performed the wounded bird act on land, and I could plainly see that she was not the red-legged species which breeds still further north.

Sailing on, we entered what appeared to be a narrow rapid river, the entrance to Shekatika Inlet, sometimes called Jacques Cartier's Harbor. After we had passed the rapids, the shores widened and we sailed as in a rock-bound lake, surrounded by miniature mountains. There were little sandy beaches and pockets of forests in protected gullies. Again, the water narrowed ahead of us and we entered a second rapids. It emerged into another and larger basin over two miles in diameter. Passing through this, we turned abruptly to the northeast and entered a small but lovely basin. All the valleys were heavily forested and the tree line on the hills was much higher than near the mouth of the inlet. We had sailed eight miles from the entrance of Shekatika Bay to the entrance of the Inlet, and ten or twelve miles from there to our anchorage at the head of the Inlet. We had come from the Arctic zone with the trees flat on the ground to the Hudsonian zone of spruce and fir trees fifteen or twenty feet high. Here and there a giant black spruce, bare for the most with a tuft of dark foliage on its summit

towered ten or fifteen feet higher. The Arctic zone was still here, however, for the hills, which reached a height of five or six hundred feet, extended their rocky and lichen-covered summits a couple of hundred feet above the tree line.

Near here the Grand Portage begins. This is a narrow winding portage path that the moccasined feet of the Montagnais Indians have worn and polished for generations. It leads over the hills and by little lakes to the Big Coxipi River. Thence by a series of lakes and portages to the St. Paul River and over the height of land to Hamilton Inlet. A portage path is well suited to the purposes of an ornithologist, for on it he may cover large areas of country without the necessity of struggling through the thick growths except for short forays on either side. Near an Indian camping site, with wonderful views of the Inlet, a Labrador Jay was foraging and uttering his weird calls and it was not far from here that I obtained my type specimens of the Labrador Chickadee.

Our two days at Shekatika were very interesting, but, taking advantage of a favorable wind, we had to be on our way. We landed at Grassy Isle with its sand beach and fringe of strand wheat, an elevated elastic tundra of lichens, mosses and curlew berry, a pool of clear water and beyond this, fifty or sixty feet above the sea, an elevated beach of small and large pebbles. This was an example of the raised beaches which so puzzled Audubon, that are so common on this rising coast.

Our next landing was at Old Fort, the ancient Port of Brest, an interesting place. Forty or fifty feet above the narrow shelf close to the sea, where the little winter village stands, is a terrace and about a hundred and fifty feet higher another terrace, while on either side still higher are others. All bear the familiar earmarks of raised beaches. Behind is a land of rocky peaks and lakes and bogs, with small patches of forest in the protected valleys. Spruce Grouse, with their young were common and easily approached.

Here and at Grand Romaine, I had seen and heard Gray-checked Thrushes but unfortunately secured only one specimen. The measurements¹ of this and of two other specimens previously

¹ The measurements are as follows: Col. Bent, 3741 ♀ Esquimaux Point, June 13, 1909. Wing 102; Tail 73; Bill 13; Tarsus 28. Col. C. W. T. 1192 ♀ Cape Charles, July 28, 1906. Wing 95; Tail 67, Bill 13; Tarsus 23. Col. C. W. T. 1448 ♀ Grand Romaine. Wing 90; Tail 67; Bill 12; Tarsus 25.

secured from the Labrador Peninsula suggest Bicknell's Thrush as they are all small. A study of a larger series is, however, needed to determine the status of this bird in Labrador.

On July 26, 1833, Audubon recorded in his Journal that they intended to call at Chevalier's settlement but were unable to do so. On the same day, of July, eighty-two years later our Captain guided us safely in the *Sea Star* among the maze of islands into the mouth of the Esquimaux or St. Paul River and we paid our respects to Louis Owen Chevalier, whose father, Louis David, was a baby at the time that Audubon passed along the coast. His first ancestor to come to the New World was elevated to the peerage as the Chevalier de St. Paul and his descendant appeared to me to retain a certain aristocratic manner and speech. He was eking out a scanty existence by netting salmon at the mouth of the river.

The next day, we sailed on the final lap of the course and dropped anchor in Bradore Bay, now as in Audubon's day, reeking of fish and fishermen and filled with fog. Perroquet Island was one of my first objective points and I found the Puffins, or Perroquets as they are called, noticeably less than when I passed the island in 1906, and immeasurably less than in Audubon's day. If the present slaughter still goes on, they will soon be extinct here. At Greenley Island near by, the presence of the lighthouse keeper has a certain restraining effect on the fishermen, and the number of birds is larger. At Perroquet Island, the birds are shot in great numbers on their arrival in the spring by the Labradorians who camp on the island. They are shot by Newfoundland fishermen during the summer, caught in gill nets spread over the ground and dug out from their burrows.¹ Jacques Cartier visited this island which he calls the "Island of Birds" in 1534 and gives an unmistakable account of Puffins. He describes them as "Crows with red beaks and red feet; they make their nests in holes under the ground, even as Conies."

The steamer which was coming from Battle Harbor and was to take me to Newfoundland for my journey home, was due at any time, but fog and storm delayed her for five days. These days were

¹ See "Bird Conservation in Labrador." By C. W. Townsend, being Appendix IV in Seventh Annual Report of Commission of Conservation, Canada, 1916.

spent at Blanc Sablon where I enjoyed the hospitality of Mr. Edwin G. Grant, the agent of the great fishing establishment of Job Bros. & Co. Ltd. The valley of Blanc Salbon is of intense interest to the botanist and geologist as well as to the ornithologist, but space does not permit me here to more than hint at its joys. There is a broad flat valley floor with terraced hillsides and raised beaches on either side and elevated plains beyond. At the shore is ancient granitic rock and white sand, while the terraces are of red Cambrian sandstone. I found a pair of Wilson's Snipe, evidently breeding in one of the swampy meadows, and, in the thickets about the brook, were Swamp Sparrows and Lincoln's Sparrows and, to my great surprise, another species of the same genus, namely the Song Sparrow. As far as I know there is no other record for the whole Labrador Peninsula for the Song Sparrow except at Lake Mistassini, while in Newfoundland there are but few records. The Magdalen Islands are generally considered to be the northern limit on the eastern coast for this species. The specimen I obtained has, according to Mr. Bangs, the characteristics of the Nova Scotia bird.

In the sand dunes here and at Anse aux Dunes, Savannah Sparrows abounded but my search for Ipswich Sparrows was fruitless.

On the afternoon of August 2, in one of the lucid intervals of fog, the horn of the mail steamer *Meigle* was heard blowing and I bade good bye to my hospitable friends. I turned away from Labrador with very different feelings from those of Audubon, who recorded in his 'Journal': "Seldom in my life have I left a country with as little regret as I do this."

THE PRESENT ABUNDANCE OF BIRDS IN THE VICINITY OF FORT ST. MICHAEL, ALASKA.¹

BY F. SEYMOUR HERSEY.

To the student of ornithology there is always a certain interest attached to the birds that inhabit the far north; those hardy species that disdain the milder climate of more southern latitudes and rear their young on the bleak Arctic tundra, leaving only when the threatened freezing of land and sea warns them of approaching winter. The warmer parts of the earth have bird life in great abundance and variety, with many bright plumaged forms to delight the eye and not a few that entrance us with their songs, and it seems natural that birds should flourish in such places. But, if we leave these familiar feathered friends behind and push our way northward, until the forests give place to scattered patches of low alders and willows, and these in turn are replaced by great stretches of open tundra, we will still find both sea and land inhabited by vast numbers of feathered creatures. Few in number are the species, but countless the individuals that make up the avian population of the north. Many spend their entire lives in this zone, retreating, at winter's approach, only a short distance south where they linger about the edge of the ice pack until the snow begins to melt on the tundra and the ice to thaw about the tundra ponds. Then they again push northward to their breeding grounds where they are joined by others; winter sojourners in our own land, but now strangely unfamiliar in their nuptial plumage.

While there are, probably, few places on the Arctic or Bering Sea coasts that are without bird life during summer, some localities seem to be more suited than others to the needs of boreal species. One such region is the stretch of tundra in the vicinity of St. Michael. The village, itself, is built on a spot somewhat elevated, but to the south and southwest there stretches away a great territory but little above sea level; in fact, so low that an unusually high tide inundates large sections. Scattered about are innumer-

¹ Read before the Nuttall Ornithological Club, June 5, 1916.

able small ponds, and these are often connected by little creeks, thus forming a perfect network of waterways. In addition, two tide channels, known as 'canals,' run through the section cutting it off from the mainland and forming St. Michael Island. From these canals there radiate smaller channels, or 'creeks,' which penetrate the region in all directions. The water in both canals is salt and varies in depth with the rise and fall of the tide. When the tide is out large mud flats, of an exceptionally soft, sticky character, are left exposed, which, during August, are frequented by large flocks of migrating shore birds. These two canals vary somewhat in size and are generally spoken of as the Big and Little Canals. They unite just before reaching the sea both at the St. Michael and at the farther ends. The banks of the Little Canal, and the country which it traverses, are of a slightly higher elevation than that described above. They are covered with a growth of moss, small creeping plants, and a little coarse grass and make a breeding ground for shore birds, ptarmigan and jaegers, as well as a few ducks, terns and small birds. The lower country about the Big Canal is the chosen haunt of loons, gulls, ducks and cranes during the nesting season and in fall of migrating water fowl of all kinds.

At the entrance to the canal is an island, of interest as being one of the few known breeding places of the Aleutian Tern. In St. Michael Bay and close to the village stands Whale Island, where a few Horned Puffins and occasionally a Glaucous Gull nest, while some fourteen or more miles away is Egg Island,—the resort of Pacific Kittiwakes, Pallas's Murres and Horned Puffins. Across the bay a low range of hills stands out prominently to view. They are set back some distance from the shore and the stretch of marshy tundra between their base and the water's edge renders them difficult to reach, except when the ground is frozen in winter. They are all probably of volcanic origin; two of them, with huge apertures in their sides being clearly extinct craters.

This locality, so favorably situated for bird study, has been the scene of several ornithologists' labors, and a number of works on Alaskan birds have been published, based, more or less, on studies made at this point. Of these, Mr. Nelson's book¹ stands pre-

¹ Report upon Natural History Collections made in Alaska between the years 1877 and 1881 by E. W. Nelson. No. III Arctic Series of Publications Issued in Connection with the Signal Service, U. S. Army, Washington, 1887.

eminent. Since 1881, when Mr. Nelson left St. Michael, very little extended work seems to have been done there. Dr. Louis B. Bishop spent a short time there in 1899 and probably a few collectors have stopped, for a day or two, at various times since, but for over thirty years almost nothing has been published from this part of Alaska.

During this time many changes have taken place in the abundance of birds in other parts of North America. Species formerly numerous have become rare or even, in a few cases, extinct, while the settling up of the country has forced others to seek new breeding grounds, or adapt themselves to the advance of civilization in those already occupied. To set forth present conditions in this part of Alaska, and point out some of the changes that have taken place since 1881, are the purposes of the present paper; but nothing is intended in any way, as a criticism of any published statements of others.

From the descriptions of the early writers, it appears that St. Michael formerly consisted of a mere handful of houses. The settlement was a post of the Alaska Commercial Company and had very little communication with the outside world. The discovery of gold at the point where Nome now is and at various places along the Yukon River, about sixteen or seventeen years ago, resulted in a short period of very rapid growth. Steamers began making regular trips from Seattle during the season of navigation and hundreds of people flocked to the country. Wooden hotels were hastily erected but many of the arrivals were obliged to find shelter in tents pitched upon the shores of the bay. Several stores were opened and without doubt their proprietors reaped a rich harvest for a while. Soon, a line of river steamers was in operation between St. Michael and points on the Yukon and passengers and provisions were transported to the various mining camps. St. Michael thus became the junction point for travel between the interior and Seattle. With the advent of so many people, it became necessary to station troops at certain points to maintain order and army posts were established at Nome, St. Michael and Gibbon.

Like most towns that spring up almost in a night, a reaction soon set in and, for several years past, the population has been rapidly shrinking. Today, most of the buildings that were used as hotels

are abandoned, with doors and windows boarded up, while the river steamers, with a few exceptions, are drawn up on the beach where they are gradually falling to pieces. The outlook for the future is as dreary as the surrounding country.

Fortunately the influx of so many people did not have any disastrous effect on the bird life of the country. Without doubt some birds were shot for food, as they still are, but in the main, the people were too engrossed in their pursuit of gold to do much hunting.

During the writer's cruise along the Alaskan coast in 1914, several short stops were made at St. Michael and in 1915 plans were laid to spend the entire summer at this place. Favorable ice conditions allowed us to reach our destination as early as May 29 and the entire time until September 8 was spent there. Through the courtesy of the War Department quarters were provided at the Army Post and from there the writer explored a large part of the surrounding country.

At the time of my arrival and for a few days afterward, the sun shone from a cloudless sky with a warmth and brightness that I have seldom seen exceeded anywhere. This condition, however, was too good to last and there came, soon afterwards, a series of southerly gales accompanied by high tides that flooded all the low country and destroyed the nests of large numbers of breeding waterfowl. The gales subsiding, there followed several weeks of as disagreeable weather as can be imagined. Heavy clouds obscured the sun and fogs and light rains were frequent. A slight breeze, at times, piled up great cloud masses which would chase one another across the sky for hours, without breaking sufficiently to allow a view of the sun. The breeze at last dying out, the fog would again settle over everything. This condition lasted until about August 20 when a few sharp frosts seemed to clear the atmosphere and more pleasant weather followed although from this time, until the end of my stay, high winds prevailed.

Taken altogether, the climate of St. Michael is one of the most disagreeable I have ever experienced. Nevertheless it appears to have no depressing effect on the bird life of the country. Waterfowl are particularly numerous,—loons, gulls and ducks being most abundant.

Of the Loons the Red-throated is the commonest and the one

most often taken. A Black-throated species is also found in the proportion of perhaps ten percent, but it is a shyer species and less frequently obtained. I assumed it to be *arctica*, as this is the bird recorded by Nelson, but the only specimens I secured, two in number, proved to be *pacifica*. The Horned Grebe is rare in the region. A single bird only was seen and was secured. Horned Puffins breed quite abundantly on Egg Island and a few also nest on Whale Island. Among them an occasional Tufted Puffin may be noted. Pallas's Murre also breeds on Egg Island in about the same numbers as the Horned Puffin but unlike that species is rarely seen in St. Michael Bay.

The Pomarine Jaeger is seen about the bay for a few days after the ice goes out in spring. Usually they are found in pairs but none breed there. The Long-tailed and Parasitic Jaegers both breed and both are generally rather abundant, but their numbers vary somewhat on different days and in different years and I believe, from observations, as well as from the condition of specimens collected, that a part of the birds seen were not breeding.

The Pacific Kittiwake breeds in large numbers on Egg Island and is very common in St. Michael Bay during the entire summer. Mr. Nelson states that "none were found near St. Michael's after the migration until toward the end of July or 1st of August," so it is evident that they have either changed their habits or increased in abundance since he wrote. When the salmon were running in June, and the natives had seines placed at various points along the shore, great numbers of Kittiwakes were present and fed upon the refuse from cleaning the fish. Even after the fishing was over they lingered about the bay and there were few days when specimens could not have been shot from the dock. As Mr. Nelson does not mention the Egg Island breeding colony it is possible that it is but recently established and would explain the increase in the number of birds of this species now found about the bay.

Closely resembling the Pacific Kittiwake in life, the Short-billed Gull could be easily overlooked while feeding about the bays, but during the summer most of them retire to the tundra ponds. They are common at all times especially after the young have learned to fly.

Large flocks of Glaucous Gulls, made up largely of birds in imma-

ture plumages, are to be found during the entire summer about the outer bays. Adults in full nuptial plumage are less common and the species appears to breed in fewer numbers than at other points on the coast.

The Glaucous-winged Gull is rare at St. Michael and probably does not occur much north of there. In the fall, both the Slaty-backed and Vega Gulls are to be seen off shore but they do not often come into the bays. After I had boarded the steamer for the homeward trip, and before we got under way, both these species were seen with other gulls about the stern of the ship.

Probably the most abundant gull is the beautiful little Sabine's. This species suffered considerably from the gales and high tides during June and many nests were found that had been destroyed. No second attempt was made at nesting and less than a dozen young birds were seen during the summer. Eggs were found June 5, young but recently hatched on June 19, and the first young on the wing July 18.

Two species of terns are found. The Arctic Tern is very abundant and is found everywhere,—about the bay, on the islands and upon the tundra, often some distance from the sea. The Aleutian Tern is restricted to two small islands (perhaps to one) and occurs in very small numbers. One of these islands is situated at the mouth of the canal as already noted. Mr. Nelson describes the island and states that "twenty pairs or so" were nesting there when he visited it. This colony was still in existence when I landed on the island in 1914 and I estimated it "did not exceed (apparently) 100 birds" (Smithsonian Misc. Coll. Vol. 66, No. 2). From the observations made in 1915, and the greater familiarity with the species thus secured, I am confident the actual number of birds in the colony was between 65 and 75.

Upon my arrival in 1915 several days were spent in watching the birds and actual counts and various estimates were made of their numbers, all of which showed that the increase in the colony during the last thirty-five years had been very small.

After nesting commenced, a series of photographs was secured and a few eggs collected. Then the island was not visited for a month to allow the birds to hatch their young undisturbed, but on again landing late in July very few adult birds could be found and

no young were seen while the presence of a Short-eared Owl upon the island seemed to explain the cause. The Owl had apparently destroyed all the young and most of the adults as several subsequent counts showed only thirteen birds remaining.

The other colony mentioned by Mr. Nelson (at Kegiktoiwik) I did not visit. A man was engaged to take me there but the breaking of the propeller shaft on his boat forced me to give up the trip as no other boat could be secured. Inquiries were made of a trader who sometimes stopped at the village and it was learned that a few "small gulls" (perhaps Aleutian Terns?) nested there. So far as I know these are the only breeding colonies of this species on the Alaskan coast.

Mr. Nelson states that a few Violet-green Cormorants nest near St. Michael but they are never very numerous. No cormorant, of any kind, was seen during my stay there and I doubt if any now breed there.

It is probable that the greatest decrease in the abundance of bird-life in this locality is to be found in the members of the order Anseres. While ducks, as a whole, were quite abundant, their numbers were much less than at the time Mr. Nelson's observations were made.

When the ice first breaks up in the bay flocks of Red-breasted Mergansers, Scoters (*O. americana*) and Pacific Eiders are to be found congregated about the rocky projections of small islands, or resting and preening their feathers on large ice cakes about the entrance to the canal. The Eiders remain all summer and breed, but are confined to the strip of tundra bordering the bay and were never found very far back from the open water. They also are plentiful on Stuart Island. The Scoters all disappear after the first days in June and I never found any evidence of their breeding. The Red-breasted Mergansers also were not seen after the ice left the bay, but during August I obtained three or four half grown young, so a few still breed there.

Back on the tundra spring arrives earlier than it does about the bay. The ice breaks up in the tundra ponds and the snow nearly all disappears long before the sea ice goes out. A trip through the canal at the time of the "break-up" shows the small ponds to be filled with ducks of several species. The Pintail is most numerous and probably nearly, if not quite, equals the combined totals of all

other species. The Old-Squaw is also abundant and the Greater Scaup ranks third. All these species breed.

Other ducks are uncommon and I found few breeding. The Mallard was seen once or twice and one nest was found on June 9. I saw none of its plumage in any of the natives' feather ornaments. The Green-winged Teal is rare in spring but for a few days in August there was quite a flight and a number were shot. One of the rarest ducks at the present day is the Spectacled Eider. In 1914 I saw three in the canal on June 8 and the remains of one at the army post the previous day. During 1915 the species was met with but once,—seven birds being seen on June 5. No evidence of its breeding was found.

During the migrations in spring and fall geese occur in some abundance I was told, and by the end of August a few flocks were beginning to pass over, while after September 1 they were seen almost daily. They were largely made up of White-fronted Geese and this species also breeds in very small numbers. The only Snow Geese seen was a flock of five on June 19. I imagine the Emperor Goose occurs at times in the fall but I have no positive evidence of it.

The Whistling Swan is now very rare about St. Michael. Many people told me they had occasionally seen them in spring or fall but very few had ever shot one. Some maintained that they nested "back in the hills" (a breeding ground assigned to all species whose nests they had never seen). If they nested anywhere near St. Michael, some would surely have been seen, but I did not meet with a single swan at St. Michael or in any part of Alaska.

The Little Brown Crane still occurs rather commonly and breeds. Late in August and early in September small flocks, probably migrants, were seen flying over, often at a great height. The largest number seen in any one flock was fourteen.

The Northern Phalarope was the only species of this family found breeding at St. Michael where several of their nests were found, usually in the wetter parts of the tundra. Eggs were found from June 5 to 16 and downy young June 19. Many adults were found to be in full moult on July 13, and from July 26 to August 11 specimens in full winter plumage predominated.

The most numerous sandpiper on the tundra is the Western but

the Long-billed Dowitcher is also quite abundant. The Pectora Sandpiper I found decidedly uncommon during the breeding season while the Red-backed was not found at all until after the fall migration began. The first Red-backed Sandpiper seen was an adult in worn plumage taken July 18 and soon after the species became common.

Wilson's Snipe is uncommon. About three pairs were breeding somewhere near St. Michael,—the males, being frequently seen and heard "winnowing," which attracted attention to the species and gave the impression that it was rather common.

Toward the end of July the Aleutian Sandpiper became very common about the rocky parts of the beach. Early in August they all disappeared and no more were found during my stay. All the specimens collected were adults in nuptial plumage.

Dr. Bishop tells me he found many in September nearly all of which were immature. Mr. Nelson gives the time of their arrival and departure as the last of July until the middle of October, so there are probably two distinct northward movements or migrations of this species,—an early one composed of adults and a later one of young birds.

The Pacific Godwit is much less common during the summer than at the Yukon Delta but during August becomes abundant.

The Hudsonian Curlew and Black-bellied Plover are uncommon, a stray pair only being seen now and then. The Golden Plover was not seen at all. As Mr. Nelson found this to be "one of the commonest breeding waders," and in view of its scarcity on our eastern coast in recent years, it seems not improbable that the species may be nearer extermination than is generally realized. The Pacific Golden Plover was met with three times. Once on June 30 when a bird in breeding plumage was seen and secured and on August 15 and 22 when two birds, doubtless migrants were seen, one of which was secured each date.

The Black Turnstone is a common bird especially on rocky beaches,—the Ruddy Turnstone less so. In one of these rocky locations a single Wandering Tattler was seen on June 10.

About the first of August a very noticeable migration of shore-birds takes place about St. Michael. The great expanse of mud flats left by the falling tide along certain parts of the canal, and

which had previously been used as resting places by the gulls, suddenly became the resort of hundreds of sandpipers. Long-billed Dowitchers, Pectoral and Red-backed Sandpipers predominated with constant additions of Western Sandpipers as the young became grown and the birds commenced to flock. Phalaropes were sometimes seen and once or twice flocks of Curlews. Here the Pacific Golden Plovers mentioned above were found, and, in one place, a very large flock of Pacific Godwits (apparently all young birds) were present for several days.

As I was passing these flats in my boat on August 4, I was surprised to see four Knots feeding together and secured all. While Turner apparently found this species at St. Michael, Mr. Nelson secured but a single specimen during his residence there. Later in the day a flock of fifteen or more birds which I thought were this species were seen at some distance, feeding on a mud flat, but the mud was too soft to walk through and after several attempts to approach them I was forced to give it up. On August 8 I again encountered two parties of two birds each, and secured all four. Later the species proved to be quite common.

During the summer of 1914, Willow Ptarmigan were numerous and I was told they were very abundant during the fall and early winter often coming about the houses. In the spring of 1915 and throughout the summer they were scarce and very few were seen. This condition was not entirely local as reports of their rarity were heard from many other parts of the coast. It is possible that, when they have increased beyond a certain point, an epidemic of some sort thins their ranks and thus keeps the species within the limits prescribed by nature.

Hawks are uncommon in this locality during summer. One or two which I did not identify were seen at times and during August immature Marsh Hawks were noted a few times and one taken.

The Short-eared Owl was the only species of this family encountered during the summer. They were quite numerous upon the tundra, being fully as common as I have ever found them to be in more southern parts of their range. Both the Snowy and Hawk Owls occur in fall and early winter according to the statements of several residents, but neither were seen by me.

In the A. O. U. Check-List a form of the Great Horned Owl is

credited to this locality. The range assigned to this subspecies (*Bubo virginianus algistus*) is the "coast region of northern Alaska from Bristol Bay and the Yukon delta northward." This is a stretch of country, that, with the exception of two or three comparatively small areas, is without trees of any kind and is, therefore, wholly unsuited to the requirements of this species. The few birds that occur, do so in fall or winter, and are clearly migrants or stragglers from the wooded regions. Along the Yukon, in the interior, are heavy forests where Horned Owls of some form almost certainly occur. The A. O. U. Committee do not, however, include this vast territory within the range of any subspecies. Both Oberholser and Ridgway refer specimens from Nulato to *lagophonus*, — a form which the A. O. U. Committee does not consider as separable from *saturatus* but, on the other hand, the range of *saturatus* is given only as including Ft. Yukon in the interior of Alaska.

If all the birds from the interior are *saturatus*, then *algistus* must be restricted to the small wooded spots about the head of Norton Sound (and possibly the Kowak River), during the breeding season. This is a very small area to produce a distinct form of a species with the solitary and unsociable habits of the Great Horned Owl, but it is certain that it does not inhabit, and breed upon, the low marshy tundra that makes up the "coast region of northern Alaska."

Woodpeckers, like most of the owls, occur in fall or early winter as stragglers or migrants from the wooded regions. While passing through the village on September 4 a familiar note arrested me in my walk and caused me to turn aside. Two Downy Woodpeckers (*nelsoni*?) were perched on the roof of a building where they remained but a moment or two before flying away toward the southeast. I fear they had many weary miles to cover before reaching another resting place.

The Northern Raven is uncommon near St. Michael and was the only member of the family observed. Not far from the two volcanic hills previously mentioned a single Raven (probably the same individual) was seen a number of times. This bird and one or two others observed in northern Alaska and Siberia were exceedingly wary; this trait forming a striking contrast to the boldness of the Unalaska birds.

Song birds are represented by few species and none are character-

ized by very great musical ability. The simple song of even the most humble performer is, however, often a source of much pleasure.

The sweetest song is probably that of the Alaska Longspur and this is also the most abundant song bird. The males in their showy nuptial dress are the most conspicuous objects on the tundra in early summer, while the duller colored and less obtrusive females are equally numerous but easily overlooked. After the young can fly and their parents have moulted into winter plumage, troops of these gay birds can often be found in patches of weeds about the houses. Here they will be flushed day after day until, toward the last of August or early in September, we suddenly miss them from their accustomed places and discover they have slipped away, unnoticed to take up a brief residence in a land less wind-swept and desolate.

Another bird frequently seen about the village, but only in early summer, is the Gambel's Sparrow. Perched on some house-top the males pour forth their songs for a short time during June. Later we find them among the alders where they nest and soon after the young are out of the nest all leave for the south. Among the alders and willows we find other birds. The shy Fox Sparrow is sometimes seen and the Western Tree Sparrow is found in almost every clump. The roving Hoary Redpolls with their darker colored cousins, the common Redpolls (in this locality, however, less common than *exilipes*), flit about from bush to bush or roam about the country in loose flocks, visiting the village and often feeding about the door-step, but returning to the alders to build their nests and hatch their young. Sometimes they nest in other situations and I was shown one nest, built in a small bush in a dooryard in the village. The nest was finished and eggs laid about ten days before my arrival.

Two species of swallows are common at St. Michael during the summer. The Tree Swallow is most numerous and nests in any available niche or crevice about buildings. Mr. Nelson has written that this species was only a migrant when he resided at St. Michael. The increase in the number of buildings in the village offers many suitable nesting sites which the swallows have not been slow to use. This species, with its graceful flight, attractive plumage, and not unpleasant twittering notes makes a welcome addition to the

summer bird life of the region. The Barn Swallow is not so common as the above species, probably because suitable nesting places are scarce. I have found their nests in empty houses but most of the birds about St. Michael build in or upon the unused river steamers that are drawn up on the shores of the bay.

None of the warblers were seen by the writer in this locality and the Alaska Chickadee, Kennicott's Willow Warbler and Siberian Red-spotted Blue-throat (species obtained by previous observers in the region), were not met with. The Alaska Yellow Wagtail was abundant and on August 8 a single Pipit was seen.

The shy Gray-cheeked Thrush is a summer resident of the alder thickets from which his whistled call note or clear ringing song may often be heard. This is the only thrush I observed but many of the residents state that a stray Robin or two is occasionally seen in spring.

In closing, I wish to acknowledge my appreciation of the interest shown in my work by all with whom I came in contact while in the north. To the officers at the Army Post,—Lieuts. Jepsom (commanding) and Rentfro, and Dr. L. T. Ferenbaugh,—I am especially indebted; not only for placing at my disposal facilities for visiting localities that would have been inaccessible without their kind assistance, but also for the pleasure of their company on several of my excursions about St. Michael, as well as for many little acts of thoughtfulness that added greatly to the pleasure and comfort of my stay there. Several of the enlisted men at the post also rendered valued assistance in handling my boat or procuring specimens, especially Sergt. Loftin who frequently accompanied me on trips afield.

THE LABRADOR CHICKADEE (*PENTHESTES HUDSONI-
CUS NIGRICANS*) IN A SOUTHWARD MIGRATION.

BY CHARLES W. TOWNSEND, M. D.

IN my last trip to the Labrador Peninsula, I collected in the forested region at the head of Shekatika Inlet, two Hudsonian Chickadees, whose plumage was so dusky that they seemed worthy of being classed as a separate race. I described them in 'The Auk' of January, 1916, under the name of *Penthestes hudsonicus nigricans*. In October, 1916, there began a migration of Chickadees of the Hudsonian species into the region about Boston that soon attained large proportions. I have had the opportunity of examining eleven specimens collected in this migration, as follows: four taken by myself at Ipswich, one at Belmont and one at Arlington; one taken by Dr. W. M. Tyler at Belmont and given me; one taken by Mr. J. L. Peters at Harvard; one in the Museum of Comparative Zoölogy at Cambridge from Lexington, and two kindly loaned me by Mr. W. DeW. Miller from the American Museum of Natural History; one of these was taken in Staten Island, one at Plainfield, N. J.

All of these eleven specimens are plainly referable to the Labrador subspecies, *Penthestes hudsonicus nigricans* and not to *littoralis* nor to true *hudsonicus*. It had been generally assumed that the race to which this unusual migration of Northern Chickadees belonged was the Acadian, and it had been so reported in the January, 1917, number of 'The Auk.'

Here, certainly, is a curious and interesting state of affairs. A new race, discovered in Labrador in 1915, appearing a little over a year later some seven hundred miles to the south in Massachusetts. It is not often that the discoverer of a new race in a distant land is so fortunate as to have that race return his visit!

The migration this winter has been an unprecedentedly large and extensive one for any form of the species. It has extended throughout southern New England and reached Long Island, Staten Island and New Jersey.¹

¹ See paper in this same issue by H. W. Wright.

In order to reach these southern regions, the Labrador Chickadees must have flown by and over the resident Acadian Chickadees of Nova Scotia, New Brunswick and the northern parts of Maine, New Hampshire and Vermont. It would be surprising if some of the latter race should not accompany the Labrador form to the south or come independently, as has been the case, as I shall show, in previous migrations, but all the specimens I have seen, taken this winter, belong to the Labrador subspecies.

It is a familiar gibe that some races cannot be named unless one knows the locality where the specimens were taken. Not so in the case of *nigricans*. That the recognition of this subspecies even in the field is possible, I have demonstrated, not only by my own observations, but by those of others. The differences between *P. hudsonicus hudsonicus* and *P. hudsonicus littoralis* on the other hand are so slight that it would be difficult if not impossible to distinguish them in the field. *Littoralis* is slightly smaller and slightly browner than *hudsonicus*. The difference in size is the more important but can only be definitely discovered by measurement.

The Labrador Chickadee is distinguished from the Hudsonian and the Acadian forms by being distinctly dusky instead of brown on the back. The mouse-colored cap is generally clearly differentiated from the back which is not so dark. This cap is noticeable in life and has been referred to by several observers independently. In size, the Labrador Chickadee is intermediate between the other two. Its bill is rather heavy, like that of the Hudsonian, but about as short as that of the Acadian. It is probable that intergrades between these three races exist whose exact status is in doubt. This is certainly the case between *hudsonicus* and *littoralis*.

My late July specimens from Labrador are indistinguishable from specimens taken in Massachusetts in December, and it is probable that they had already moulted into winter plumage. The first winter and later winter plumages in Hudsonian Chickadees are practically indistinguishable. A study of specimens of the Acadian Chickadee taken at all seasons of the year, shows browner upper parts and, with rare exceptions, no distinction in the form of a cap. The flanks are, as a rule, browner than in the Labrador or Hudsonian form. Birds in juvenal plumage are slightly darker above.

I have, on several occasions, placed a series of specimens of *nigricans* taken in Massachusetts this winter, with one taken in Labrador in July and with several of *littoralis* taken in Nova Scotia in winter side by side with their backs up before various members of the Nuttall Ornithological Club. No one has had any difficulty in at once picking out the specimens of *littoralis* from those of *nigricans*.

The Acadian Chickadee is the resident race in northern New England as it is in Nova Scotia and New Brunswick. All of Mr. Brewster's Umbagog specimens are of this race; and several specimens sent me from the Victoria Memorial Museum by Mr. P. A. Taverner taken in the Gaspé Peninsula, are also plainly the same.

I have studied nine Massachusetts specimens of these northern Chickadees taken in previous winter migrations. Six of these are in the collection of Mr. Wm. Brewster, one from Mr. H. M. Spelman, one from Mr. J. L. Peters and one from the Museum of Comparative Zoölogy. Five appear to be Acadian, and four Labrador Chickadees. The records and measurements of all are given in the following table, which also includes those of the eleven specimens of *nigricans* taken this winter. For comparison, I have given the measurements of two specimens of *nigricans* taken in Labrador, two of *littoralis* taken in Nova Scotia and three specimens of *hudsonicus* from Mackenzie and Alberta.

I am greatly indebted to Mr. Wm. Brewster and to Mr. Outram Bangs for the opportunity of examining specimens and for their kind assistance in this study.

<i>Penstheses hudsonicus nigricans</i>			wing	tail	tarsus	culmen	depth of bill
C. W. T.	1420	Shekatika, Labrador, type July 23, 1915	♂	66	15	8.5	4.5
"	1421	" " " "	♀	62	14	8.0	5.0
"	1466	Ipswich, Mass. Dec. 10, 1916	♂	61	14	9.0	5.0
"	1467	" " " "	♂	64	15	8.5	4.5
"	1468	Arlington, " " 15, " "	♂	65	14	9.0	5.0
"	1469	Belmont, " " 15, " "	♀	60	15	8.0	4.5
"	1470	Ipswich, " " 17, " "	♂	64	17	9.5	5.0
"	1471	" " Jan. 1, 1917	♀	62	14	9.0	4.5
"	1472	Belmont, " " 10, " "	♂	60	15	9.0	5.0
J. L. P.	1722	Harvard, " Nov. 8, 1916	♀	59	16	9.0	4.5
M. C. Z.	79642	Lexington, " " 9, " "	♂	62	16	9.0	4.0
A. M. N. H.		New Dorp, Staten Isl. Jan. 14, 1917	♂	61	16	9.0	4.5
A. M. N. H.		Plainfield, N. J. Dec. 31, 1916	♀	59	14	8.5	4.0
W. B.	9685	Belmont, Mass. Dec 31, 1884		62	14	9.0	4.5
"	26270	No. Adams, Mass. " 19, 1889		62	14	9.0	4.5
"	30310	Mt. Greylock, " " 16, 1889		59	14	8.5	3.5
J. L. P.	438	Harvard, " Nov. 5, 1913	♂	67	15	9.0	4.5
		Average		62	14.8	8.8	4.5
<i>P. hudsonicus littoralis</i>							
C. W. T.	606	Annapolis, N. S. Dec. 28, 1883		60	12	9.0	4.0
"	608	" " " "		60	14	8.5	4.5
W. B.	34	Concord, Mass. Oct. 30, 1870	♀	58	14	8.0	3.5
"	25621	Arlington, Mass. Oct. 19, 1889	♀	63	13	9.0	4.5
"	30309	Mt. Greylock, " Dec. 16, 1889	♂	64	15	8.0	4.0
H. M. S.	86	Cambridge, " " 31, 1880	♀	61	14	9.0	4.0
M. C. Z.	63986	Belmont, " Nov. 20, 1913	♀	62	16	9.0	4.0
		Average		61	14	8.6	4.0
<i>P. hudsonicus hudsonicus</i>							
M. C. Z.	46179	Fort Liard, Mackenzie		65	16	9.5	5.0
"	46975	Fort Simpson		68	16	10.0	5.0
V. M. M.	2294	Edmonton, Alberta, May 7, 1897	♂	69	14	10.0	4.5
		Average		67	15	9.8	4.8

LABRADOR CHICKADEE (*PENTHESTES HUDSONICUS*
NIGRICANS) IN BOSTON AND VICINITY IN
THE FALL OF 1916.

BY HORACE W. WRIGHT.

AGAIN after an interval of only three years another extensive southern migration of *Penthestes hudsonicus* into New England has occurred. The subspecific type of the birds of this incursion, Dr. Charles W. Townsend informs me he will discuss in a paper which he is preparing for 'The Auk.' Briefly it may be stated that he finds all the birds, which have been collected in this latest migration and have come under his examination, to be of the *nigricans*¹ type and not the *littoralis* type. My paper on the incursion of *hudsonicus* in 1913,² upon such testimony as is presented in the paper, assumed the type of that incursion to be *littoralis*. It is not the purpose of this brief article to assist in determining the subspecific type of the visitants in either migration, but to indicate by records obtained that the southward movement of *hudsonicus* has been general and as extensive, if not, indeed, more extensive than the migration of 1913. With the records which I have obtained I am enabled to unite those of a number of other observers, who have kindly coöperated to further the purpose in view.

My own records are: Mount Auburn Cemetery, Cambridge, October 29, one bird; Middlesex Fells, Melrose, November 7, two birds; 25, five birds; Belmont, November 9, nine birds; 20, eight birds; December 9, eight birds; January 1 and 3, 1917, three birds; Arnold Arboretum, Boston, November 16, three birds; December 5, twelve birds; January 8, two birds; Jamaica Plain, November 23, one bird.

Other observers' records are: Mr. William Brewster, Concord, October 7 and 12, one bird; 22, three birds; 23 and 31, one bird; November 3, one bird.

Dr. Charles W. Townsend, Ipswich, November 5, three birds;

¹ Auk, vol. XXXIII, Jan., 1916, p. 74.

² Auk, vol. XXXI, April, 1914, p. 236.

December 10, seven birds; 17 and January 1, two birds; Belmont, November 26, five birds.

Mr. James L. Peters, Harvard, November 8, one bird.

Miss Mabel P. Cook, Lexington, November 9, one bird.

Miss Annie W. Cobb, Arlington, November 11, two birds; Arnold Arboretum, Boston, December 1, twelve birds; Ipswich, December 2, ten birds.

Dr. Winsor M. Tyler and Dr. Walter Faxon, Belmont, November 15, twelve birds; 19, eight birds; 26, two birds; December 9, eight birds, 11, four birds; January 10, two birds; Dr. Tyler, Ipswich, December 31, one bird; Lexington, January 7, one bird.

Mr. C. J. Maynard, Waltham, November 18, five birds; 25, two birds.

Mrs. Edmund Bridge, Middlesex Fells, Melrose, November 19, nine birds; Arnold Arboretum, December 9, two birds; Walden, Concord, January 29, four birds.

Mr. Harold L. Barrett, Arnold Arboretum, November 19, 26, December 3 and 10, three to five birds; December 24, eleven birds; 31, seven birds; January 1, 1917, five birds; 7, four birds; 21, ten birds; 28, four birds.

Miss Viola E. Crittenden, Beverley Cove, Beverley, November 26, five birds; December 3 *et seq.* to January 7, two birds; 13, none.

Dr. John B. May, Cohasset, November 27 *et seq.* to January 5, four birds.

Dr. Walter Faxon, Granny Hill, Lexington, November 18, 22, 29, December 2 and 8, three birds; December 10 and January 7, one bird; Belmont, December 3, eight birds.

Mr. Campbell Bosson, Belmont, December 2, three birds.

Judge Charles F. Jenney, Westwood, January 6, 1917, two birds.

Miss Helen Granger, Chestnut Hill, Brookline, January 23, one bird.

The above enumeration indicates that twenty-eight birds have been noted by me in five different localities, while in 1913, twenty-five, and possibly thirty, individuals were recorded in twelve different localities, my outings extending over a wider range of country during the earlier incursion, which indicates that these Northern Chickadees have been in larger companies during the migration of 1916. Several of the records of other observers confirm this

view. The largest company observed in 1913 consisted of nine individuals on the Belmont lands. In this second incursion twelve birds have been reported in the Arnold Arboretum, twelve at Belmont, ten at Ipswich, and nine in the Middlesex Fells. In each instance these numbers were assembled essentially together, although on some occasions seen in scattered near groups.

The crest of the wave of the 1916 migration in this vicinity seems to have been between November 9 and December 10; earlier records are of one to three individuals only, while my later records fall to two or three individuals respectively in the first week of January, 1917, three birds on the Belmont lands and two birds in the Arboretum. Mr. Barrett, however, furnishes a record of ten birds seen in the Arboretum, January 21, after having obtained smaller records on previous dates, and on January 28 he found but four birds.

In general it may be said that these Hudsonians of the migration of 1916 have been much more shy than the birds of the 1913 migration. I have seen none at as near range as I viewed many in the former migration. Then they were accustomed to be feeding in the sunlight and frequently upon stalks of golden rod and aster, allowing very near approach and as full scanning as the observer desired to make. During this migration of 1916 the birds have been very elusive and kept themselves very largely in dense shade either in the cedars, hemlocks, or pines, as the growth might be, or upon the ground underneath from which all strong light was excluded. The birds have also been very restless and suspicious upon approach, leading the observer a considerable chase sometimes to follow them up. This has made difficult the determination of their particular coloration. So "a bird in the hand" rather than "in the bush" has been required for an examination adequate to determine the subspecific type. Happily, Dr. Townsend with the assistance of others is rendering this necessary service. The call-notes, however, are always *specific* and distinct from those of the Black-capped Chickadee. So an identification of the species is readily made.

A letter from Mr. George L. Kirk of Rutland, Vermont, to Dr. Townsend, which the latter has kindly placed in my hands with the privilege of quoting, is of so much interest as bearing on this 1916

migration that it is herewith presented almost in full with the author's permission. Mr. Kirk writes under date of January 12, 1917: "Your letter in reference to the Acadian Chickadee came to hand this morning. . . . Unfortunately I did not secure any, nor have I shot any of these Northern Chickadees during the two years I have been collecting bird skins. I very much regret that I cannot supply you with material for examination in preparation for your paper, especially in view of your statement that the birds which visited us in the fall of 1916 were probably the form *Penthestes hudsonicus nigricans*, but the best I can do is to give you some idea of their abundance last fall.

"For some reason the birds were abnormally shy at this time. Heretofore those I have seen were so tame that one could approach within five or six feet, if they happened to be feeding low, but this year they were constantly on the move and seemed to leave the vicinity every time they realized a hunter was near. . . .

"The Acadian Chickadee is said to be found rather regularly in northern Vermont, but eighteen years of careful observation have convinced me that it is rare in this part of the State, even in the winter season in the heavy spruce woods of our mountains. With the exception of that season, three or four years ago, when you had a visit from them in Massachusetts (I have not my notes at hand this minute to look up the date), I have seen only an occasional single bird until 1916, when they were much more abundant than during the flight previously referred to.

"During the week of October 22, 1916, I was in the mountain woods every day hunting partridges. The Acadian Chickadees were then confined almost entirely to spruce timber above 1800 feet altitude and were so abundant that their notes (so different from our Black-cap when the two are heard together) were heard everywhere. They kept to the thick evergreens so persistently that it would be difficult to estimate how many were seen or heard each day, but they were as abundant as any species of bird about at that time. The troops in which they travelled seemed to keep by themselves and not mingle to any extent with the native Chickadee. The following two weeks the birds were seen in the hardwoods of the lower country, and the writer and friends who are interested in birds saw and heard them a number of times. After

November 20, they apparently had passed south, for, although I have been in the woods for a considerable time once each week since that date, I have heard the notes of only two stragglers. . . .

"This has been the best season in many years here for winter birds. Redpolls, Snow Buntings, Pine and Evening Grosbeaks, and White-winged Crossbills came unusually early and are abundant."

Mr. Kirk in a subsequent letter states that he saw one of the Northern Chickadees on January 14 at Rutland.

Mr. Richard M. Marble of Woodstock also gives interesting Vermont testimony in a letter received from him, in which under date of January 14, 1917, he states, "An Acadian Chickadee has been a visitor to Mr. Fred Dana's feeding station since November, and possibly before," and he adds, "also a wintering White-throated Sparrow. Doesn't this locality seem a little far north for that bird to be wintering? Undoubtedly a home-made feeding station, which is always well supplied with food, has much to do with his stay. A Junco is almost always with him. We have all the winter visitants with us now and in fairly good numbers. I see almost every day in some large box elders on our lawn three Evening Grosbeaks. Pine Grosbeaks, of which there seem to be more adult males than usual, are quite common, as are both Crossbills and Redpolls."

In a later letter Mr. Marble writes: "If one is able to distinguish between the *nigricans* type, as described by Dr. Townsend, and the *littoralis* type by the brown on the sides, the Northern Chickadee which is wintering with us is unmistakably *littoralis*. The brown on its sides is very red and conspicuous. It also seems to me that the back shows quite a brownish tint." May not this Woodstock bird be a northern New England resident, and, therefore, as such definitely *littoralis*, attracted to the feeding station in its wanderings, and remaining a constant visitor because so well cared for?

As indicating the time of the southward movement reaching northern New England, it may be stated that before my departure from my summer home at Jefferson Highland, New Hampshire, October 11, I had seen several individuals in that locality. The records are one bird on the first day of the month, three on the fourth day, one on the fifth, and one on the tenth. These records

probably represent as many different birds on account of the various localities and separation of time in which they were seen. No *hudsonicus* had been noted earlier than October 1. Its appearance was upon the first morning of heavy frost, the mercury registering 30° with ice skimming the puddles in the road. A considerable migratory movement had occurred in the night, bringing White-crowned Sparrows and Ruby-crowned Kinglets with an increase of White-throated Sparrows, Juncos, Myrtle Warblers, and Olive-backed Thrushes. White-winged Crossbills and Pine Siskins had already been much in evidence about the Highland. My assistant, Mr. E. D. Parker, in a recent letter informs me that he heard and saw some of these Northern Chickadees about the cottages on the Highland at various times up to the middle of December.

During the week of October 22, Mr. Kirk states that while he was in the mountain woods, he found the species "so abundant that their notes were heard everywhere." The rapid progress of individuals southward is indicated by Mr. Brewster's records at Concord, Massachusetts, which range from October 7, when the first bird was noted, and October 12, when the second bird was noted, to the 22d day, when three birds were seen "pecking at gray birch seed-cones." And Dr. Tyler informs me that he recorded on October 29 and again on November 3 in his notes respectively for those days that he heard the calls of several Chickadees flying southward and for a moment alighting in a tall white pine tree, which he was almost certain were the notes of *hudsonicus*, identical to his ear with the minor notes of the Acadian, as heard on several occasions in the White Mountains and in 1913 when for a few weeks the species was common in the Boston region. By the middle of November, or thereabouts, the birds seem to have been most numerous in this vicinity and not to have diminished in number, perhaps, until about December 10, after which date fewer individuals were in evidence.

And as indicating the much farther southward movement of the migration of *hudsonicus*, Mr. H. H. Cleaves in a letter to Dr. Townsend states that he saw four individuals at Staten Island on December 5 and that these birds were first seen on December 2. Dr. Townsend has later received from the American Museum of Natural History a specimen taken at Staten Island on January

14, 1917, and one taken at Plainfield, New Jersey, on December 31, 1916. Other southern records in this 1916 migration, which have been already published,¹ are of one bird on November 6 at Rhinebeck, New York, and one on November 13 at Hewlett, Long Island.

Golden-crowned Kinglets have proved to be the closest companions of these Northern Chickadees on many occasions. Indeed, they seem to be their natural associates. Black-capped Chickadees are rather their incidental companions, with whom they occasionally come in touch, but do not habitually move. Casual associates on the cedar-grown pastures of Belmont Hill were a Palm Warbler on November 9 and December 9, a full-plumaged male Cape May Warbler and a Ruby-crowned Kinglet on November 20. The individuals which have come under my notice have usually been quite silent, giving their characteristic calls infrequently, and so revealing their presence but little. On this account it is quite probable that more individuals have been present on some occasions than have been enumerated and the numbers actually recorded fail to adequately express the size of the migration. They may be regarded, however, as serving to suggest its extent and for illustration.

¹ Auk, vol. XXXIV, Jan., 1917, p. 91.

ORNITHOLOGY AT ST. MARK'S.

BY J. A. FARLEY.

ORNITHOLOGY at St. Mark's has nothing to do with the pigeons that flock to be fed in the sunny piazza in front of the ancient church. Nor does it apply to any birds, alive or dead, within the resplendent edifice. It has reference only to the remarkable mosaics of bird-life, done by an unknown mediæval artist, which may be seen just inside the glistening portals of the building. Ornithology at St. Mark's, therefore, means the pictures of birds that appear among the other rich Byzantine mosaics in the ceiling of the atrium of the venerable shrine of St. Mark the Evangelist. Most of these mosaics are of the thirteenth century and are thus among the earliest in San Marco, although exceeded in point of age by the famous eleventh and twelfth century work of the golden interior of the Venetian basilica.

The Old Testament story through Genesis and Exodus is told in the mosaics of the atrium; and their chief natural history lies in the series that illustrates the life of Noah. Most notable in this respect are the nine mosaics of the Flood. These are of the early thirteenth century. They may be seen on the under side of the arch that separates the main entrance of the church (door of St. Mark) and the cupola next to the Capella Zen. Arranged in tiers they show in the highest the building of the Ark, following the command of the Lord to Noah. In the tier next below the animals enter the Ark, by sevens and by pairs — the clean and the unclean. The four-footed creatures are grouped on the right; the crowd of birds are on the left. Among the latter are a number of representative Old World forms.

These bird-pictures are of deepest interest. The mediæval mosaicist (whether Byzantine master or Italian pupil), hampered though he was by his stiff art, did his work on the whole wonderfully well in respect to a truthful representation of nature. Furthermore, his art makes his remote age to live again — in a new and unexpected way. It appears that certain species of birds were as representative forms of wild life in the thirteenth century as they

are to-day. Birds as well-known now as then figure in mosaics made seven hundred years ago! It is hard not to speak in extravagant terms of the mosaicist who proved himself no mean naturalist (or at least observant student of nature) by portraying so faithfully the forms of wild life that he saw about him.

Conspicuous among these speaking likenesses appear two of the best known game birds of Europe which for centuries have afforded food and sport for man — the Red-legged Partridge, *Caccabis rufa*, and the common grey Partridge *Perdix perdix*. Not all of the bright, showy coloration of the Red-legged Partridge is pictured in the colored cubes of the mosaic, but the artist seized upon enough salient points of plumage to characterize the species completely. There is the striking, bold, black ring on the head behind the eye and the very evident row of transverse, black stripes on the sides and flanks, together with the white and brown quills of the wing. In spite of some minor faults, both of omission and commission, the species is exceedingly well-portrayed. Undoubtedly in the thirteenth century the Red-legged Partridge was as well-known a game bird and as much admired for its good looks as it is today. Small wonder that the artist took pains! Long, long before the Middle Ages, if report be true, this pugnacious fowl was kept for fighting purposes, like the game cock to-day, and tradition runs that the Emperor Alexander Severus enjoyed the sport.

The common grey Partridge — esteemed for the excellence of its flesh since the days of Martial — is as well pictured as the less succulent, red-legged species. Here again the mosaicist indicates plainly what is perhaps the best field-mark of the bird — the buffy head and throat and the contrasting, slaty, vermiculated breast. The characteristic cross-bars on the grey sides are strangely omitted, to be sure, but the narrow, whitish, linear streaking on the brown wings (another good diagnostic feature) appears plainly — though in a rudimentary way. Another good bird-portrait — broadly speaking — in spite of the relative failure as to details.

A third plainly portrayed game bird of Europe is the Pheasant. The handsome pair stand directly above the Grey Partridges and behind the Red-legged Partridges. The scarlet before and below the eye of the cock Pheasant is as well brought out in the mosaic as in any Dutch painting of still life. The rich orange of the

bird's back also is as well shown by the *tesseræ* as if done in pigment. A bird of long and famous history — and of early game law as well as myth — is *Phasianus colchicus*. The Argonauts brought him home along with the fleece and other spoil from the banks of the river Phasis in Colchis where in the swampy woods that border the stream the bird may be found to-day “as wild as a hawk” — in strong contrast to the semi-domesticated fowl of English covers. It is not impossible that this native of Asia Minor was introduced into Europe a dozen centuries before Christ. Certain it is that the Pheasant was naturalized at a very remote age to the west of its original habitat. It was well-known in Italy in the comparatively recent period of the Middle Ages, and was a table-bird in England before the Norman Conquest — as at Waltham Abbey where *unus phasianus*, as the substitute for two partridges, was permitted to the canons by Harold's bill of fare. Very likely the Romans brought the bird to Britain for they sometimes naturalized “strange animals” in the countries they conquered.

Still another very well-known food-bird of the Old World (highly esteemed for the table in the days of Moses and ever since) which if not “as big as life and twice as natural” is nevertheless so vividly pictured that even the tourist who runs may read, is the Migratory Quail, *Coturnix coturnix*. It is impossible to fail to identify this little, plump, brown pair, with their buffy breasts and variegated backs, as the Quail of Holy Writ. Strange indeed if the artist had forgotten in his feathered throng at the door of the Ark a bird so famous in Biblical story. Ranging over such an enormous area as Europe, Africa and much of Asia, the Quail was as well-known to the nations of antiquity as the Eagle and the Crane. Well-named “Migratory” it vies with the Swallow in crossing seas, deserts and lofty mountain chains.

The trusting expectant air with which these little, obedient fowl look up into the face of Noah as they await their turn at his hands is very naïve.

It should be observed that the bills and the feet of the Quail are red — which is an ornithological inaccuracy. But it will be noted how often in these mosaic-pictures red inaccurately appears on foot or bill. It is evident that the mosaicist deliberately availed himself of the vivid color (whether right or wrong) as the best way

of showing plainly these small and relatively insignificant parts of a bird. Similarly, various birds which are not entitled to it are decorated with a white eye-ring to bring out an otherwise indistinct or else wholly unobvious eye.

The central figure of the whole mosaic is of course Father Noah himself as he carefully puts into the Ark his pair of Peafowl. These birds are most beautiful. The splendid purple of the neck of the cock contrasts vividly with the green of the hen. As the Byzantine symbol of eternal life the Peacock is naturally the first bird to go into the Ark. The mosaicist is here at his best and with good reason. As the emblem of the beauty and glory of immortality, the lavishly-colored bird demanded special attention at the hands of the artist; and there resulted a finely drawn and colored picture as true to nature as to art. It is in the portrayal of this most magnificent of all birds that the man of the mosaics reaches his height as an artist of animal life. Like the Pheasant the Peacock is a bird of remarkable history. It was King Solomon's ship of Tarshish (or else a craft of King Hiram's) — the first "East India-men" of which we have information — that brought this native of Indian forests over the old trade route from the East. This importation of Solomon's into Palestine is the earliest record of the bird for the Mediterranean regions. Alexander the Great, however, is commonly thought to have introduced the resplendent fowl into Europe.

As would be expected, some of the more striking forms of cosmopolitan, water-bird life did not escape our mediæval artist's eye. His [correctly] red-billed, slaty Gallinule or Moorhen (one of the most familiar British wild birds of to-day and with closely-allied forms in America and Africa) is well depicted save for its red legs which artistic violation of avian proprieties has already been explained and condoned.

Another extremely well-known water-bird of wide distribution is the Merganser. Here again the artist has achieved an ornithological success — within limits. His pair of fish ducks have the crest and the toothed bill of their kind. Thus the strongly-marked form is extremely well-characterized. But while all-sufficient as to generic details which point unmistakably to *Mergus*, the crude coloration does not at all "favor" the striking and beautiful *M.*

serrator of the Northern Hemisphere. Save for their long crests there is nothing about these dull nondescripts to show that they are Red-breasted Sheldrakes; and even their eyes are white instead of the proper merganser red. Yet it is this well-known water-fowl of Asia, Europe and North America that the artist undoubtedly had in mind to portray. Did he tire? Or was it another hand? Surely the hand that pictured the Peacock, the Pheasant and the Partridge was skilful also to portray the green-headed and rufous-chested Sheldrake which the red Indian of undiscovered America knew as well as the Italian of the Dark Ages and he, in his turn, as well as the Venetian of a later day — the peregrinating water-bird, here, there and everywhere in the northern parts of both hemispheres; the same today and yesterday, now and forever, one and indivisible — judging by its non-plastic past.

Conspicuous by reason of their stature in the crowd of birds at the Ark's door stand the Cranes. These are the common European species *Grus grus*. The blue, long-legged waders lack the details of their color-plan. Yet the white stripe running down the side of the neck appears; while more important still the touch of red on top of the head, indicating the semi-naked crown of *Grus*, shows that the artist was at least aware of this most diagnostic as well as striking external of the Crane. This most ancient form of bird-life was pictured at an earlier day than the mosaics of San Marco for Cranes appear on the frescoed walls of Dehr-el-Bahari. But even 3,000 years are made to seem but as yesterday by this Miocene bird.

The "clean" barnyard Poultry are strongly represented in the throng of birds. In bold relief against the dark side of the ship, as well by their bulk as by their color, are the seven, fat, white Geese, red-legged and yellow-billed. The adjacent group of the same number of Fowl are the usual variegated barnyard lot — this old-fashioned type the same in the thirteenth century as to-day. The rooster in the corner has a splendid comb, in shape, size and color true to life; but his equally well-conceived (from an artistic standpoint), impressionistic, five- or six-feathered tail is woefully unavian in that it lacks more than half the total number of quills required to complete the thoroughly orthodox, galline tail. Again the mosaicist's license — or his limitations. This tail has an

astonishing resemblance to that other weird one of six feathers worn by the famous rooster of the spire of the West Barnstable meeting-house on Cape Cod.

Facing the Cock and the Hens stand the Ducks. Like their vis-a-vis neighbors these "clean" fowl seem also to say; "We are seven." Among them the inevitable Mallard, so frequent in Italian art, with his green head and white neck-ring appears. The Common Fowl alone excepted, no bird of economic importance has so greatly profited man; and the story of the domestication of this stock-form — the original of the modern barnyard Duck — is lost in the dim beginnings of history.

One last barnyard bird is the discordant Guinea Hen. The pair are crudely colored, for their blue dress has only rudimentary white streaks instead of being properly polka-dotted. Their red combs and wattles are also ineffective. Yet the species is unmistakable. The pair stand at the feet of Noah, and, like the Quail, look up trustingly into the face of the builder of the ship.

Not all the birds in this striking mosaic-picture are identifiable. Doubtless the artist evolved certain "freaks." But in addition to various nondescripts the like of which were never seen on land or sea, there are a pair of long-tailed and red-billed green Parrots which are plainly the common Indian species *Palæornis torquata*. This is the "Ring Parrot" which became known to Grecian bird-fanciers as one of the results of Alexander's Indian campaigns. Linné, indeed, believed the historic bird to be the Javan species of the genus which he named accordingly *alexandri*. But this species never could have come in contact with the Macedonian king's sailors. Nor is there much reason to think, as some have argued, that *P. eupatria*, the Cingalese species of this long-tailed Parroquet group, was the famous green parrot with a red ring on its neck which Alexander's people brought back to Europe. The weight of opinion favors the common Ring-necked Parroquet of India — *P. torquata* — as the Alexandrine bird, and its generic name sets forth its antiquity.

It should be observed that the half neck-ring of *P. torquata* is rosy, not white as in the mosaic. But here again we must not make too deep scrutiny into the mosaicist's mutiny. Probably he found that on the arch overhead the relatively small neck-ring of the bird

would be brought out much better by white than by pink. As to the unparrotlike white spotting on the breasts of the birds, this may be explained by the guess that either a moulting or a cage-worn specimen was copied. The artist must not be taken too strictly. It is not assumed that he ever saw the Ring-necked Parroquet in its native Indian wilds. Let it suffice that we see in the mosaic undoubtedly the first representation in color of the ancient Parrot which Aristotle mentions and Pliny describes.

The flocks of the Ring-necked Parroquet swarming in the jungle are among the characteristic features of the East Indian landscape. Not only in forest but in town and village the harsh cries and abundance of the beautiful bird make it notable. It is the best known of East Indian parrots — this “Rose-ringed Parrakeet.”

Among the remaining birds, more or less identifiable in the picture, are a small white pair which are probably meant for Doves; and a second Columbine pair, green-backed and black-billed, which seem to represent some species of the very edible East Indian green Fruit Pigeon group — *Treroninae* — several species of which are found commonly in India today.

There are more birds in the lowest mosaic which shows the entry of Noah and family into the Ark. The family stand at attention while “the father of the flock” puts into the ship his last remaining birds. As Noah hands in two splendid yellow-eyed and black-billed Eagles, he turns and gazes full-faced at the spectator with a most imposing air of playing to the gallery. These Eagles are finely colored; and this is specially true of their yellow legs and feet and black claws which are depicted — one might almost say *drawn* — with painstaking care. As in the case of the Peacock the artist plainly took special pains with his Eagles as would be expected in the unscientific age that regarded the Eagle as the King of birds.

The naked tarsi of these birds indicate that they are Sea Eagles (*Haliaeetus*), although there is no reason to doubt that the “nobler” form — the Golden Eagle of the feathered leg — was a well-known bird of the period in Italy. Perhaps the mosaicist’s zoological knowledge did not extend so far as tarsi, whether feathered or not. On the other hand the black bills of the pair indicate the genus *Aquila* of which the Golden Eagle, wide-spread in the Northern Hemisphere (but a rather “better” bird in America than in Europe),

is the fine type. Certainly, the artist in his benighted age had never heard of either *Aquila* or *Haliæetus*. Hence this generical confusion is probably only another case of the artist's (like the poet's) license — a mixing, that is, not of metaphors but of characters.

On the ground, in front of and facing Noah, stand a pair of either Crows or Ravens — but incorrectly yellow-eyed. Behind these come a pair of Storks, red-billed and red-legged — as in life. The only unlikeliest thing about these familiar birds of tale and fable is the restricted black of their quills. In reality the extensive black on wing of the Common Stork, contrasting with the snow-white of the rest of the body and the red of bill and legs, makes the three-foot bird a conspicuous object in the Continental landscape.

Behind the Storks again come a pair of Pelicans. Tiring of the long wait incidental to the movement of such large numbers of living things these honest birds have calmly and comfortably squatted down on the *whole* foot — giving a restful touch to the whole proceeding — like the sensible, well-conducted “totipalmates” that the artist undoubtedly intended to portray.

Behind the patient Pelicans wait in their turn a pair of graceful, purple Herons, slim-necked and black-crested, which seem clearly referable to the African genus *Melanophox*.

In rear of all and vivid against their gold background stand a pair of good-sized slaty birds — black-headed, billed and footed, and to a less extent black-winged. These are the well-known and widespread Hooded Crow of Europe — *Corvus cornix*. They are well depicted save for the too-restricted black of the wing.

While this completes the tale of the birds of the Entry, it is hard not to glance at the extraordinary pair of smiling carnivora in the adjoining animal section which in the insistent hands of Noah are going into the Ark docilely like great, good-natured, fat, obedient Puppies which indeed they much resemble; nor at the tender face of Noah himself as he looks down fatherly at his puppy-like pets.

The story of Noah is continued on the opposite [right] side of the arch. We now see a submerged world, and the rain still comes down. But in the next scene behold the hungry Raven with greedy glittering eye as he feeds, oblivious of all else, on a floating carcass; while from Noah's hands, at a window of the ship, the gentle Dove (with most unavian wings it must be owned) is preparing in her turn to sally out.

In the next mosaic the Dove has returned, and there ensues the exit from the rainbow-encircled Ark. We see the enterprising Red-legged Partridge already perched at the corner of the roof of the craft; the Dove standing in the gutter, as if in doubt, yet preparing to fly; next an unidentifiable water fowl; and last (to complete this party of "early birds") the Guinea Hen. One final bird—an astonishing nondescript like nothing ever seen on sea or shore, with its red bill and foot, blue and white body, black crown and white crest—flies out into the very eyes of Noah who with a stern face is hauling out of the Ark's dark door the sprawling Lioness.

The series of Flood mosaics ends with Noah's sacrifice and the rapid dispersal of the animals which rejoicing in their recovered freedom are seen leaping away in every direction over the dripping rocks. It should be said in simple justice to Father Noah (and the artist) that throughout these Flood mosaics the captain of the ship wears the air of portentous gravity that well befits the individual upon whose shoulders rests the burden of the preservation of the entire animal life of the globe!

The Creation mosaics (with their accompanying Latin inscriptions) of the cupola that adjoins the arch of the History of Noah contain more natural history which it is hard to ignore. In the section that shows the Lord making living things, Peacocks appear; while in a little pool a pair of black, coot-like birds swim close to a bright green crocodile.

Most naïve is the mosaic of Adam naming the beasts. (*Appellavitque Adam nominibus suis cuncta animantia.*) The engaging Lioness upon whose head the First Man lays his hand has a most docile and half-human face—though with tongue far run out. That "one touch of nature makes the whole world kin" (or did at least before the Fall) is mirrored in the childlike complacency and the meek pride in her just-bestowed name of this artless beast. True indeed it is of this gentle Jane that she "bears her blushing honors" meek upon her.

The mediæval mosaicist rises nearest to greatness as an artist of the great out-of-doors in the beautiful mosaic that shows the creation of birds and fishes (*Dixit etiam Dominus: producant aquae reptile animae viventis et volatile super terram: jumenta et omnia reptilia in genere suo.*)

The picture is a crowded one — full of life and motion — kaleidoscopic — a phantasmagoria in fact of bird-life and fish-life — but with really good effective grouping. There is a whirl and a swirl of fishes in the blue sea below and a crowd of flying birds in the pale sky above. The sea swarms with brilliant-hued fish darting this way and that, the whole revolving around the central figure of a terrific sea-monster, bewhiskered and with plesiosaurus-like teeth — undoubtedly the earliest known representation of the sea-serpent (but agreeing wonderfully well with latter-day descriptions by truthful mariners) and as such peculiarly fit for mural decoration in maritime Venice.

The crowd of birds overhead in the breezy firmament complete the other half of this most beautiful mosaic. They are mostly seafowl although the inevitable Owl, so favored by mediæval artists, appears. There are the conventional Mallard, the Swan, Gulls white and pied, an Egret (for the Egret was as well-known in a state of nature — if not on woman's head-gear — in the thirteenth century as in a later Audubonian day), and various non-descripts — nearly all with legs and wings poorly, yes appallingly, drawn but the whole flock well grouped nevertheless and exceedingly full of life and motion. The breezy picture in short smacks of the sea, and the forgotten artist who made it surely knew his sea.

The simple beauty of the very early mosaics of Byzantine type in the atrium of San Marco appeals to all. Most original and often quaint they are undoubtedly among the most attractive of the earlier mosaics in the glorious building — as they are among the finest. But these Old Testament subjects take on an added interest when the fact of their origin is recalled. The mosaicists who executed them copied *Byzantine originals*. The illuminations in some early Bible of type similar to the Cotton Bible (if not in that ancient book itself) are evidently reproduced on the vaulting and the arches of the atrium. Even if not copied direct from the Cotton Bible of the fifth century, at least the designs are essentially identical with the paintings in that age-worn book.

Lord Macauley seems to have noted as early as any the likeness of the atrium mosaics to the miniatures in an early Bible. He has told of the pleasing impressions which he gained from his inspection of St. Mark's. "I never was more entertained by any build-

ing," he writes. "Everything carries back the mind to a remote age; to a time when Cicero and Virgil were hardly known in Italy; to a time compared with which the time of Politian and even the time of Petrarch is modern." As a Latinist he must mention the "very badness of the rhyming monkish hexameters;" while confessing that "there is something attractive to me" in this "very badness" — as there is also in the "queer designs and false drawing of the pictures." The final comment of this busy brain is of special interest. After "an hour spent in making out" the Biblical histories of the atrium, the historian concludes: "They amused me as the pictures in very old Bibles used to amuse me when I was a child."

The future peer of Rothley dipped into a vast number of books in his omnivorous-reading, boyhood days. It seems a safe inference that some at least of his "very old Bibles" were of the Cotton type or model which furnished in the thirteenth century the designs for the Genesis and Exodus mosaics of the atrium of San Marco — and doubtless also for general Bible illustration of the day.

CRITICAL NOTES ON THE EASTERN SUBSPECIES OF *SITTA CAROLINENSIS* LATHAM.

BY HARRY C. OBERHOLSER.

THE name *Sitta carolinensis carolinensis* is now applied to the White-breasted Nuthatch of the northeastern United States and southeastern Canada. Recent investigation, however, shows that the Florida form must be called *Sitta carolinensis carolinensis*; and since none of the names for eastern birds of this species is found to be available for the northeastern race, the latter must be given a new designation. Therefore the eastern races of *Sitta carolinensis* will stand as below:

***Sitta carolinensis carolinensis* Latham.**

[*Sitta*] *carolinensis* LATHAM, Index Ornith., I, 1790, p. 262 (America, Jamaica) (based principally on *Sitta carolinensis* Brisson, Ornith., III, 1760, p. 596, from Carolina and Jamaica; which in turn is founded chiefly on Catesby's *Sitta capite nigro*, Nat. Hist. Carolina, Fla., and Bahama Is., I, 1753, p. 22, pl. 22, from Carolina).

Sitta carolinensis COVERT, in Chapman's History Washtenaw Co., Michigan, 1881, p. 175 (*nomen nudum*: = errore pro *Sitta carolinensis* Latham).

Sitta melanocephala VIEILLLOT, Nouv. Dict. d'Hist. Nat., XXXI, 1819, p. 336 (nom. nov. pro *Sitta carolinensis* Latham).

Sitta carolinensis atkinsi SCOTT, Auk, VII, April, 1890, p. 118 (Tarpon Springs; Florida).

Sitta carolinensis RIDGWAY, Bulletin U. S. Nat. Mus., No. 50, part III, 1904, p. 443 (Covert MS.) (in synonymy; nom. nov. pro *Sitta carolinensis* Latham).

Sitta atkinsi litorea MAYNARD, Records of Walks and Talks with Nature, VIII, No. 1, January 12, 1916 (January 13, 1916), p. 5, pl. [1] (New River, North Carolina).

CHARS. SUBSP.—Size small; upper parts dark-colored; lower parts soiled white or shaded with grayish; female with black of head usually not overlaid with plumbeous.

MEASUREMENTS.¹—Adult male: wing, 87.3, tail, 44.6, culmen, 18.5; tarsus, 18.4; middle toe without claw, 15.6. Adult female: wing, 86.3; culmen, 18; tarsus, 18; middle toe without claw, 15.7.

TYPE LOCALITY.—Mouth of the Savannah River, South Carolina.²

GEOGRAPHIC DISTRIBUTION.—Southeastern United States: north to North Carolina, Tennessee, Kentucky, southern Indiana, southern Illinois, and southeastern Missouri; west to western Arkansas and eastern Texas; south to southeastern Texas, Louisiana, Mississippi, Alabama, and Florida; and east to the Atlantic coast from Florida to North Carolina.

Remarks.—The *Sitta carolinensis* of Latham³ was based chiefly on the *Sitta carolinensis* of Brisson,⁴ of which the habitat was given as Carolina and Jamaica; and on Catesby,⁵ whose bird came from Carolina. As this species does not occur in Jamaica, the American Ornithologists' Union Committee⁶ very properly re-

¹ Average in millimeters of ten specimens of each sex, taken from Ridgway, Bulletin U. S. Nat. Mus., No. 50, part III, 1904, p. 444.

² Here for the first time definitely designated.

³ Index Ornith., I, 1790, p. 262.

⁴ Ornith., III, 1760, p. 596.

⁵ Nat. Hist. Carolina, Fla., and Bahama Is., I, 1753, p. 22, pl. 22.

⁶ Check-List North Amer. Birds, ed. 3, 1910, p. 345.

stricted the type locality to Carolina. For the present purpose of fixing more definitely the type region of *Sitta carolinensis*, we here designate the mouth of the Savannah River in South Carolina as the type locality, a region which Catesby is known to have visited. The name *Sitta carolinensis* must, therefore, apply to the form to which the birds from South Carolina belong. Mr. Robert Ridgway¹ has referred these to the race from the northeastern United States, which has hitherto commonly passed as *Sitta carolinensis carolinensis*. A careful examination of a satisfactory series from South Carolina shows that the birds from this region are, in both size and color, decidedly nearer the Florida subspecies, hitherto called *Sitta carolinensis atkinsi*;² so that, unless three forms be recognizable, the bird from South Carolina must belong to the same subspecies as that from Florida.

Mr. C. J. Maynard has recently described a new subspecies of *Sitta carolinensis* from the New River in southeastern North Carolina as *Sitta atkinsi litorea*.³ His type, taken by himself on November 24, 1903, has, through his courtesy, been examined in the present connection, and found to measure as follows: wing, 87 millimeters; tail, 46; exposed culmen, 15.5; tarsus, 18.3; middle toe without claw, 15.5. In color and other characters it is identical with birds from South Carolina, hence his name must in any consideration, fall as a synonym of *Sitta carolinensis carolinensis* Latham. Mr. Maynard also proposes to recognize three forms of the White-breasted Nuthatch in the eastern United States.⁴ *Sitta carolinensis carolinensis* of the northeastern United States; *Sitta atkinsi atkinsi* from Florida; and *Sitta atkinsi litorea* Maynard from the coast region of North Carolina, South Carolina, and Georgia. The specific distinctness of *Sitta atkinsi* Scott from the form of *Sitta carolinensis* occurring in the northeastern United States, hitherto called *Sitta carolinensis carolinensis*, cannot be maintained, as may readily be ascertained by an examination of specimens from all parts of the range of these birds; in fact, the birds from South Carolina and Georgia, which Mr. Maynard calls a

¹ Bulletin U. S. Nat. Mus., No. 50, part III, 1904, pp. 441-443.

² *Sitta carolinensis atkinsi* Scott, Auk, VII, April, 1890, p. 118.

³ Records of Walks and Talks with Nature, VIII, No. 1, January 12, 1916, p. 5, pl. [1].

⁴ Records of Walks and Talks with Nature, VIII, No. 1, January 12, 1916, pp. 5-7.

subspecies of the Florida form, are really intermediates between the latter and the bird from the northeastern United States. Furthermore, none of the characters which separate the Florida race from that of the northeastern United States are entirely constant. Therefore, whether two or three forms be recognized, it is evident that all must be considered races of one species. The two forms commonly regarded valid — a northern and a southern subspecies — interdigitate over a wide area in such a perplexing manner that it would be exceedingly difficult to characterize an intermediate race; and this consideration, based on a careful examination of specimens from the entire eastern range of *Sitta carolinensis*, shows that it is not satisfactory to recognize three forms of the species; hence the name *Sitta carolinensis atkinsi* Scott becomes a synonym of *Sitta carolinensis carolinensis* Latham.

The *Sitta melanocephala* of Vieillot¹ is simply a renaming of *Sitta carolinensis* Latham, and as such becomes a synonym of the latter. The *Sitta carolensis* of Covert² is merely a *lapsus calami* or misprint for *Sitta carolinensis* Latham, and is, besides, a *nomen nudum*. Mr. Ridgway, however, in his synonymy of *Sitta carolinensis*³ has given it status as a synonym of *Sitta carolinensis* Latham.

Birds from South Carolina, the type region of *Sitta carolinensis carolinensis*, are slightly larger and very slightly paler than birds from Florida, and have, in the female, usually more suffusion of plumbeous on the pileum; but, as already noted, are very much nearer this form than to that of the northeastern United States. Birds from Tennessee, Kentucky, southern Indiana, southern Illinois, southeastern Missouri, western Arkansas, and eastern Texas are intermediate between the Florida bird and that from the northern United States, but are on the whole to be referred to the former.

Specimens from the following localities, all of which may be regarded as breeding records, have been examined in the present connection:

¹ Nouv. Dict. d'Hist. Nat., XXXI, 1819, p. 336.

² In Chapman's History Washtenaw Co., Michigan, 1881, p. 175.

³ Bulletin U. S. Nat. Mus., No. 50, part III, 1904, p. 443.

Alabama: Autaugaville; Squaw Shoals; Carlton; Ardell; Jackson; Orange Beach; Huntsville; Sand Mountain (9 miles west of Trenton, Georgia).

Arkansas: Van Buren.

Florida: Cousin's (Osceola County); Gainesville; Kissimmee; seven miles southwest of Kissimmee; twenty-four miles southwest of Kissimmee; Lake Arbuckle; Morgan Hole (De Soto County); Olney (Brevard County).

Georgia: No definite locality given.

Illinois: Parkersburg; Mt. Carmel.

Indiana: Wheatland; Knox County.

Kentucky: Lexington.

Louisiana: Belcher; Hackley.

Mississippi: Bay St. Louis.

Missouri: Willow Springs.

North Carolina: New River.

South Carolina: Wayne's Place (Christ Church Parish); Kershaw County; Georgetown; Mt. Pleasant; Chester; Lanes.

Tennessee: Rockwood.

Texas: Giddings.

***Sitta carolinensis cookei*, subsp. nov.¹**

Sitta carolinensis carolinensis AUCT. nec Latham.

CHARS. SUBSP.—Similar to *Sitta carolinensis carolinensis*, but larger; upper parts lighter; lower parts more purely white; bill usually relatively less slender; and female with black of head usually overlaid with plumbeous.

DESCRIPTION.—Type, adult male, No. 558, Collection of W. W. Cooke; Washington, District of Columbia, May 23, 1904; W. W. Cooke. Pileum and cervix glossy black; upper parts carbon gray, the rump and upper tail-coverts paler; middle tail-feathers neutral gray; remainder of tail black with large white terminal or subterminal spots on the three outer feathers; wings fuscous black; the median, greater, and primary coverts, the inner webs of the two inner tertials, a subterminal streak on the inner web of outermost tertial, and the basal three-fourths of outer web of the same feather, black; the lesser wing-coverts, edgings to wing-coverts and quills, together with terminal portion of outermost tertial and outer webs of inner tertials, neutral gray, palest on the secondaries and inclined to whitish on the middle portion of some of the primaries; sides of neck opposite the jugulum, black, connecting with the black of the cervix; sides of head and anterior portion of sides of neck, together with lower parts, white (in the present specimen somewhat adventitiously soiled), the crissum mixed with

¹ Named for Professor Wells W. Cooke, in appropriate recognition of his services to ornithological science.

rather light chestnut; axillars white, anterior under wing-coverts black, posterior under wing-coverts white; thighs black, somewhat mixed with pale chestnut.

MEASUREMENTS.—Male:¹ wing, 92; tail, 46.9; culmen, 19.3; tarsus, 18.9; middle toe without claw, 15.7. Female:² wing, 89.1; tail, 45.8; culmen, 18.1; tarsus, 18.4; middle toe without claw, 15.7. Type (adult male): wing, 93.5; tail, 49; exposed culmen, 17; tarsus, 18.5; middle toe without claw, 15.5.

TYPE LOCALITY.—Washington, D. C.

GEOGRAPHIC DISTRIBUTION.—Northeastern United States and southeastern Canada: north to Newfoundland, southern Quebec, southern Ontario, northern Minnesota, and northern North Dakota, casually to northern Manitoba; west to middle North Dakota, eastern South Dakota, eastern Nebraska, central Oklahoma, and central northern Texas; south to central northern Texas, central Oklahoma, Kansas, northern Missouri, central Illinois, central Indiana, Ohio, West Virginia, and Virginia; and east to Atlantic coast of United States from Virginia to Newfoundland.

Remarks.—The best characters to separate this race from *Sitta carolinensis carolinensis* consist in its larger size, the darker coloration of its upper parts, and the usual plumbeous suffusion on the pileum of the female. The relatively shorter and stouter bill is a good average character, but so uncertain that it is of comparatively little value in the determination of individual specimens. The broader gray margins of wing-coverts and secondaries are largely a matter of season; and the lower parts are so often adventitiously stained from contact with the bark of trees that the color of these parts is not of much practical value in identifications. Birds of this race from Maryland and the District of Columbia are practically identical in color and size with those from the northern United States.

Specimens of *Sitta carolinensis cookei*, all of which may be regarded as breeding records, have, in the present connection, been examined from the following localities:

District of Columbia: Washington.

Illinois: Cook County; Jacksonville.

Kansas: Leavenworth.

Maryland: Laurel; Kensington; Montgomery County; Branchville; Finzell (6 miles north of Frostburg); Grantsville; Bittinger.

¹ Average in millimeters of 13 specimens.

² Average in millimeters of 16 specimens.

Minnesota: Fort Snelling.

Nebraska: Omaha; Douglas County; Florence.

New York: Suspension Bridge; Highland Falls; Canandaigua; Hunter.

Ohio: Circleville.

Oklahoma: Ponca Agency; Savanna.

Ontario: Lorne Park (Peel County); Lake of Bays.

Pennsylvania: Carlisle; Watsontown; Philadelphia; Chester County; Erie; Newton Hamilton; Beaver; Leasuresville.

Rhode Island: Fort Adams.

Texas: De Leon.

Virginia: Falls Church (Fairfax County); Gainesville.

Wisconsin: Kenosha.

THE BREEDING OF THE BLACK-THROATED BLUE WARBLER AT HATLEY, STANSTEAD COUNTY, QUEBEC 1916.¹

BY H. MOUSLEY.

IN 'The Auk' for January and April, 1916 (Vol. XXXIII, pp. 57-73, 168-186) I have given the status up to the fall of 1915 of the seventeen different species of warblers I had so far discovered here. Of these, four are transients, and the remaining thirteen summer visitants, out of which latter number the nests and eggs of ten had actually been found, thus leaving only three to be accounted for viz.: The Black-throated Blue (*Dendroica caerulescens*), the Black-throated Green (*Dendroica virens*) and the Blackburnian (*Dendroica fusca*). Unfortunately I was prevented from doing any field work from May 10 to June 14, so that I missed the spring migration entirely, with the exception that on May 6, I saw a pair of Yellow Palm Warblers (*Dendroica palmarum hypochrysea*) on the little seventy-five acre farm, which in 1912 had given me my first and only record until the one just mentioned.

¹ Abstract of paper read before the Nuttall Ornithological Club, Oct. 2, 1916, by Dr. Chas. W. Townsend, for the author.

The finding of most warblers' nests is not an easy matter at any time, but one is generally aided to some extent if the birds can be watched at migration time, as some indication is then often gathered of where a certain species is likely to nest by always finding it near or about the same spot in the woods. This missing, then, of the spring migration as will be readily understood was a great drawback, but fortunately I had found the three species already named during the summer of 1915, frequenting a large wood not far from my house, which consisted for the most part of a mixture of such trees as maple, beech, fir, pine and hemlock with nice open spaces in many parts where young maple saplings and others had obtained a height varying from one to six feet or more. It was to this wood therefore that I repaired on June 14 with the full determination of thoroughly exploring the ground where I had located a pair of Black-throated Blue Warblers on June 23, 1915, but had failed to find any trace of their nest. Hardly had I reached the spot and started to search, when in the forks of a little maple sapling just three feet above the ground (and only fifty yards from the spot where I had flushed the female in the previous year) I came upon a beautiful nest, which was different from any warbler's I had ever found before, and which from its construction I took to be the one I was in search of.

It was not what one might describe as entirely typical of the species, for the outside construction lacked the rotten or pithy wood, which is so characteristic of these birds, but in other respects it conformed to standard requirements, as not only was it large and bulky, but the sides were thick walled, being composed for the upper part of woven cedar or grape vine bark, whilst the lower portion was of white birch bark, the lining consisting of slender, red, hair-like rootlets (exactly the same as used by the Magnolia here) and some hair.

The dimensions were as follows, viz: outside diameter three and a fourth inches, inside one and three-fourths inches; outside depth four and three-fourths inches, inside one and one-half inches; and at the time of finding was empty, but apparently quite finished. On visiting it the following day about eleven o'clock it contained one egg, and for the next three days (always before the above mentioned time) an extra one was laid until the full set of four was

complete. It can well be understood that this being the first record of the bird nesting here, I was very careful not to linger longer than necessary on each visit, and it was not until after the fourth egg had been laid, and the female had begun to incubate, that I was able to prove beyond a doubt that the nest and set belonged to *Dendroica caerulescens*, as on no occasion had either of the birds put in an appearance on any of my visits. However I had now no difficulty in getting many a good look at the female as after being flushed from the nest she seemed in no way concerned and usually remained in the vicinity for some time preening her feathers and flitting about. The male never once put in an appearance nor could I find or hear him singing anywhere in the wood. After securing this nest and set I decided to keep a careful watch, and see if I could catch the birds at their second venture, but it was not until June 28, that I came across either of them, and this time it was the male (or perhaps a male) who was singing in the tree tops some 125 yards south of the site of the nest found on the fourteenth. I visited this new locality on several occasions but could find no trace of the female or a nest, and had almost given up all hope, when by a lucky chance I came across a nest on July 10. This was quite close to a little footpath along which I was walking (the previous one having also been within seven yards of a logging road) and as in the case of the first one was in the fork of a little maple sapling, but only one foot three inches above the ground instead of three feet, and was ninety yards east of the site of the first nest, and one hundred yards from the spot where I had heard the male singing on June 28.

On flushing the female I naturally concluded I had found the second nest of the only pair of birds I considered to be frequenting the wood, but on examining it, and the set of four eggs, I found both differed in a marked degree from those of the first, as not only was the nest (which I have since presented in situ to the Victoria Memorial Museum at Ottawa) a thoroughly typical one, being composed almost entirely of small pieces of rotten or pithy wood, but it was also much less in depth, the dimensions being; outside diameter three and one-eighth inches, inside one and seven-eighths inches; outside depth two and one-half inches, inside one and one-half inches; the pithy wood being held together by fibrous materials and spiders silk, no birch or cedar bark being present, and the inside

lining consisted of fine black rootlets and black and white hairs, the walls also not being so thick as in the previous one. In addition to this difference in the nests the two sets of eggs were not at all alike, the first one being rather pointed and minutely spotted size $.70 \times .51$, whilst the second one was more obtuse and boldly spotted size $.66 \times .50$. The female on being flushed behaved exactly in the same manner as before dropping to the ground and when some little distance away from the nest rising above the underbrush into the lower branches of the adjacent trees, where she preened her feathers and flitted about most unconcernedly, in marked contrast to the behavior of the Redstart, Myrtle, Magnolia and Chestnut-sided Warblers, all of whom show great concern when flushed from their nests after incubation has been in progress a few days, which was the case in the above instance. As regards the male he behaved as before not putting in an appearance, although on the day of finding the nest I located one (presumably the male of this pair) singing in the tree tops some two hundred and fifty yards away. Certainly in my experience the behavior of the male of this species is not very complimentary, but I have to write as I found him.

After locating this second nest at such a late date, and apparently belonging to another pair of birds, I made renewed efforts to try and find a third one, but without success, although on August 1 I found a female feeding a young bird just able to fly, at a spot some seventy-five yards north of the first nest, and on this occasion the male put in an appearance for a brief period only, but made no effort to feed the young one. Probably these were the advance guard of the fall migration and have no bearing on the matter, in which case it is of course possible that the two nests and sets of eggs although differing so greatly may have belonged to the same pair of birds, in favor of which my inability to find a third nest and the unusual behavior of the male in keeping out of the way in both instances would seem to point. As regards the Black-throated Green Warbler I found the parent birds feeding young on the ground on June 28, and also located two empty nests, thus definitely adding it to the breeding list, so that there only remains the Blackburnian Warbler of the summer visitants whose nest, eggs or young I have so far failed to find. In conclusion I may mention that I

have been fortunate in adding the rare Cape May Warbler to my list, as well as the Nashville and Water-Thrush (*noveboracensis*) having obtained examples of all three towards the end of August, so that my total now stands at twenty species of these interesting little birds that I have found here so far.

NOTES ON NORTH AMERICAN BIRDS.

I.

BY HARRY C. OBERHOLSER.

THIS is the first of a series of articles on the status, relationships, and nomenclature of various North American birds. These notes have been gathered during the course of many years of work, largely on the collections of the Biological Survey and of the United States National Museum, and in the identification of specimens for other institutions and for individuals. They are now presented for the benefit of ornithologists interested in the birds of this region.

***Cepphus snowi* Stejneger.**

A specimen of this species said to have been taken on the Kenai River, Alaska, on October 7, 1906, is recorded by Dr. Anton Reichenow in Niedieck's "Kreuzfahrten im Beringmeer," 1907, p. 250. A recent letter from Dr. Reichenow says that this specimen reached the Berlin Museum in too poor a condition to be preserved. He says, moreover, that while the identification of the specimen is correct, there is considerable doubt about the proper labeling of the specimens in the collection made by Mr. Niedieck. In view of this likelihood that the labels were in some manner transposed, it seems quite inadvisable to add the species to the North American list on the basis of this record.

***Dendrocygna viduata* (Linnæus).**

A specimen of this South American duck was killed on the Hackensack Meadows in New Jersey in October, 1912, and subsequently recorded by Dr. George B. Grinnell.¹ While there seems to be no doubt of the proper identification of the specimen, its presence in New Jersey, so far beyond the limits of its normal home in South America and the West Indies, together with the fact that it is a common species in zoölogical gardens, strongly indicate that it probably escaped from captivity rather than that it wandered so far out of its normal range. In view of this fact it seems undesirable to include it in the list of North American birds without further and more positive evidence of its entirely natural occurrence within our limits.

***Anas rubripes tristis* Brewster.**

This poor duck has indeed had an unfortunate history, but it is sincerely to be hoped that brighter days are in store. The name *Anas rubripes tristis* was proposed by Mr. William Brewster² as a substitute for *Anas obscura* Gmelin, which is preoccupied by *Anas obscura* Pontoppidan for a species of the Old World. Previously Mr. Brewster had separated the red-legged form of this species as a distinct race and named it *Anas obscura rubripes*,³ taking as his type an autumn specimen from Lake Umbagog, New Hampshire.

That there are two well-marked forms of this species, one of them with bright red legs, the other with legs of an olivaceous brown, or at most only slightly reddish color, is apparently admitted by all. Whether these forms are really distinct subspecies or merely individual or other variants is of course the point at issue. Mr. Brewster has consistently claimed the subspecific distinctness of the two forms, but from this view some other ornithologists have dissented. Subsequently, however, Dr. Charles W. Townsend⁴

¹ Auk, XXX, January, 1913, p. 110.

² Auk, XXVI, April, 1909, p. 176.

³ Auk, XIX, April, 1902, p. 184.

⁴ Auk, XXIX, April, 1912, pp. 176-179.

published the notes made by him on some young captive ducks of this species reared from the down and kept under observation for two years. During this time the birds maintained the characters of the smaller form with brownish or slightly reddish legs; so that these observations, so far as they go, fully bear out Mr. Brewster's contention of the validity of the two subspecies, *Anas rubripes rubripes* and *Anas rubripes tristis*.

When the description of *Anas obscura rubripes* was first published and the distinction between the two supposed races first pointed out, the present writer was inclined to believe that these differences were due either to age, season, or individual variation. During the years that have intervened, however, every opportunity to investigate the status of these two birds has been taken; and all the results of these investigations are now seen to strengthen Mr. Brewster's view of the subspecific distinctness of the two forms. In fact, for a time it looked very much as though the two birds were specifically distinct; but there are, as Mr. Brewster says, numerous specimens variously intermediate between the two, so that subspecific titles more properly express their true relationships.

The technical name for the Red-legged Black Duck becomes *Anas rubripes rubripes* Brewster, since this is the first tenable name applied to the species; and the ordinary Black Duck, formerly known as *Anas obscura*, becomes, as above indicated, *Anas rubripes tristis*.

The principal characters and the geographic distribution of the two, so far as now determinable, are as follows:

***Anas rubripes rubripes* Brewster.**

SUBSPECIFIC CHARACTERS.—Size somewhat larger; feathers of the pileum usually much edged with grayish, ochraceous or tawny; entire throat normally spotted or streaked with very dark brown or blackish; the dark markings on the anterior lower parts and on the sides of the head larger and more blackish as well as usually more sharply defined; bill yellow; tarsi and toes bright red.

GEOGRAPHIC DISTRIBUTION.—Breeds from northern Ungava to the western side of Hudson Bay in the neighborhood of Fort Churchill, south to southern James Bay and for an undetermined distance southeastward. In winter it ranges south to Arkansas, southern Texas, southern Louisiana, southern Georgia, and Florida.

Anas rubripes tristis Brewster.

SUBSPECIFIC CHARACTERS.—Size somewhat smaller than *Anas rubripes rubripes*; feathers of the pileum not conspicuously edged with paler; chin and throat usually with very few dark markings or none; the dark markings on the neck and sides of the head smaller or narrower and not so deeply blackish; bill greenish black or olivaceous; legs and toes olivaceous brown, yellowish or pale orange.

GEOGRAPHIC DISTRIBUTION.—Breeds from southern Maryland and northern Indiana north to Wisconsin, southern Ontario, New Hampshire, central Quebec, Newfoundland, and the coast of Labrador; in winter south to southern Louisiana, southern Georgia, and North Carolina.

Lophortyx catalinensis Grinnell.

This bird was originally described by Dr. Joseph Grinnell as *Lophortyx catalinensis*,¹ but it has since been considered merely a synonym of *Lophortyx californica vallicola*. An examination of the material now available shows, however, that it is a recognizable subspecies, differing from *Lophortyx californica vallicola* in its decidedly larger size, particularly of wing, tail, and feet, and in its rather darker coloration. It is larger also than *Lophortyx californica californica*, but much paler. While these differences are not entirely constant, and therefore do not justify specific rank, they are excellent average distinctions, and fully warrant the subspecific separation of this bird, which is confined to Santa Catalina Island. It should therefore stand as *Lophortyx californica catalinensis*.

Myiarchus crinitus residuus Howe.

The Florida race of the Great-crested Flycatcher was first distinguished by Mr. Outram Bangs, who named the northern bird *Myiarchus crinitus boreus*.² Unfortunately, however, as Mr. R. H. Howe has pointed out,³ the birds from South Carolina, which must be considered the type locality of *Myiarchus crinitus* (Linnæus),⁴

¹ Auk, XXIII, July, 1906, p. 262 (Avalon, Santa Catalina Island, California).

² Auk, XV, April, 1898, p. 179.

³ Contrib. North Amer. Ornith., I, May 21, 1902, p. 30.

⁴ *Turdus crinitus* Linnaeus, Syst. Nat., ed. 10, I, 1758, p. 170.

are nearer the northern than the southern bird. This makes necessary the use of the name *Myiarchus crinitus crinitus* for the northern race. Mr. E. W. Nelson,¹ some years ago, as a result of his studies on this difficult genus, endorsed the opinion of Mr. Bangs and Mr. Howe that the Florida form is worthy of recognition. Now, after a careful examination of pertinent material, the present writer is convinced that this is the correct view.

The Florida bird differs from that of the northeastern United States in its strikingly larger bill and somewhat shorter wing. Care must be taken in making comparisons to select actually breeding birds from Florida, since a mixture of migrant northern birds would of course readily obscure the characters of the race inhabiting Florida during the breeding season. The name for this Florida subspecies is, of course, *Myiarchus crinitus residuus* Howe,² and the type is a specimen taken at Istokpoga Lake, Florida. Comparative measurements of these two races may be found in Mr. Nelson's paper.³ The summer distribution of *Myiarchus crinitus residuus* is limited to the peninsular portion of Florida; its winter range is unknown.

***Planesticus migratorius caurinus* Grinnell.**

This northwestern form of the American Robin was first described by Dr. Joseph Grinnell from specimens taken at Windfall Harbor, Admiralty Island, Alaska.⁴ It has generally been regarded as an untenable race, but Mr. H. S. Swarth has recently claimed its distinctness on the basis of a study of an extensive series from Vancouver Island.⁵ Examination of a large series of western robins now fully substantiates Mr. Swarth's view and shows that *Planesticus migratorius caurinus* is a form well worthy of recognition. It differs from *Planesticus migratorius migratorius* in its much smaller white terminal tail spots, paler upper parts, and more sharply defined blackish pileum. From *Planesticus migratorius*

¹ Proc. Biol. Soc. Washington, XVII, March 10, 1904, pp. 30-31.

² Contrib. North Amer. Ornith., I, May 21, 1902, p. 30.

³ Proc. Biol. Soc. Washington, XVII, March 10, 1904, p. 31.

⁴ Univ. Calif. Publ. Zool., V, No. 2, February 18, 1909, p. 241.

⁵ Univ. Calif. Publ. Zool., X, No. 1, February 13, 1912, pp. 81-82.

propinquus it differs in smaller size, larger terminal white tail spots, and darker coloration.

Its breeding range extends from the Pacific slope of the State of Washington north through the Pacific coast region of British Columbia to the coast of southeastern Alaska as far north as Glacier Bay.

A NEW SUBSPECIES OF RED-WINGED BLACKBIRD FROM WESTERN CENTRAL AMERICA.

BY A. BRAZIER HOWELL.

AMONG a collection of birds which was made by A. van Rossem in Salvador, during 1912, are five red-wings — four males and a female — which prove to be of a form heretofore unnamed. I am indebted to H. W. Henshaw of the Bureau of Biological Survey, and to D. R. Dickey, for the loan of specimens that were necessary for working up this material. The series of *Agelaius p. richmondi* used in making the comparisons, comprise skins from the states of Vera Cruz, Tabasco, and Yucatan, Mexico. Those of *A. p. sonoriensis* are from the Imperial Valley, and the Lower Colorado River in California.

***Agelaius phoeniceus grinnelli*, new subspecies.**

GRINNELL'S RED-WING.

TYPE.— Male adult; no. 1585 coll. A. B. H.; San Sebastian, Salvador; July 18, 1912; collected by A. van Rossem.

DIAGNOSIS.— From *richmondi*, the males differ in being larger, especially the wings; the culmen is slightly shorter, but the bill is much heavier, thicker, and deeper. The length, taken in the flesh, is about the same as that of *sonoriensis*, but wing and tail are shorter, especially the former, while tarsus, middle toe with claw, and culmen are longer, the bill being also heavier, thicker, and deeper. The wing formula agrees with the usual one of *richmondi* (ninth primary shorter than fifth), as opposed to that of

sonoriensis (fifth primary shorter than ninth). The female, in comparison with the same sex of *richmondi*, lacks the pinkish tinge of the throat, and the dark streaking of the underparts is broader, and extends higher on the throat. The ear coverts are grayish as in *sonoriensis*, rather than buffy as in *richmondi*, but are paler than those of either. The upper parts are about the same as those of the last-named race, and hence darker than in *sonoriensis* — that is, the dark centers of the feathers are broader —, but as the only female at hand is considerably worn, nothing can be told in regard to the lighter margins of these feathers. Measurements of type.— Length (in flesh) 230 mm., wing 122.5, tail 82, exposed culmen 23, tarsus 32, middle toe with claw 23.5.

Remarks.— Three of the males are fully adult, and are of uniform size, but the fourth is a second year, breeding bird, very much under sized. The middle wing coverts are black, and the lesser covers have only a very little red at their bases. The five specimens of *grinnelli* were collected in July, whereas most of the other material used in comparison was taken during the spring, but in reaching conclusions in regard to markings, due allowance has been made for seasonal wear.

As *sonoriensis* has been taken no farther south than the Territory of Tepic, Mexico, and *richmondi* extends at least to eastern Nicaragua, I assume that *grinnelli* was derived from the latter form.

In his notes, A. van Rossem states that San Sebastian is six miles from the Pacific Coast, and lies about in the center of an immense mangrove swamp, which is some sixty miles long by six wide. Near San Sebastian is a large brackish, tule swamp, and in this he saw but seven red-wings, although his stay was of eighteen days duration. The female, which he secured July 22, was engaged in building a nest.

I take pleasure in naming this form after Dr. Joseph Grinnell, who has done so much for western ornithology and ornithologists.

SECOND ANNUAL LIST OF PROPOSED CHANGES IN THE A. O. U. CHECK-LIST OF NORTH AMERICAN BIRDS.

THIS is the Second Annual List of proposed A. O. U. Check-List additions and changes in the names of North American birds. Like the First,¹ the present list comprises only ornithological cases, — *i. e.*, such as require specimens or the identification of descriptions for their determination, and consists of additions, subtractions, rejections, and changes of names due to various causes.

As far as possible the subject is here brought up to December 31, 1916, and nothing proposed after that date is included. A few mistakes in the First Annual List are now corrected, and some other points, notably newly recognized genera, more fully treated than space in the previous list would allow. There are, for various reasons, a number of omissions in the present list, but it is as nearly complete as possible. In the Third Annual List, which will be published in the Auk for April, 1918, it is purposed to bring the subject up to the close of the calendar year 1917; and thereafter, by annual lists, each comprising the ornithological activity of a calendar year, to keep the Check-List in this respect up to date.—
HARRY C. OBERHOLSER.

I. ADDITIONS AND CHANGES IN NAMES.

Hydroprogne tschegrava imperator (Coues) (*cf.* Stone, Auk, XXXIII, 1916, p. 429) should be **Hydroprogne caspia imperator** (Coues), since (*Hydroprogne*) *caspia* is the accepted specific name of this bird. **Thalasseus** Boie, Isis, X, 1822, p. 563 (type, *Sterna sandvicensis* Latham). Recognized as a genus (*cf.* Mathews, Birds Australia, II, pt. 3, 1912, p. 338; and Oberholser, Proc. U. S. Nat. Mus., XLIX, 1915, pp. 516–517). Includes the following North American species now in the genus *Sterna*:

¹ For the First Annual List of Proposed Changes, see Auk, XXXIII, 1916, pp. 425–431.

It will be understood that these lists cover *proposed* changes. The A. O. U. Committee has not as yet acted upon any of them, but they are presented in order to have them for handy reference and use, as well as to invite investigation and discussion.

Thalasseus maximus (Boddært).

Thalasseus elegans (Gambel).

Thalasseus sandvicensis acufavidus (Cabot).

Sternula Boie. Recognized as a genus (*cf.* Mathews, Birds Australia, II, pt. 4, 1912, p. 373); and will contain the following North American forms now included in the genus *Sterna*:

Sternula antillarum antillarum Lesson.

Sternula antillarum browni (Mearns.)

Sternula antillarum browni (Mearns). New subspecies. *Sterna antillarum browni* Mearns, Proc. Biol. Soc. Wash., XXIX, 1916, p. 71 (near Monument No. 258, Mexican Boundary Line, on the edge of the Pacific Ocean, San Diego County, Calif.). Range: Pacific Coast region from California to Peru.

Sterna fuscata (Linnaeus) becomes **Onychoprion fuscatus** (Linnaeus), by recognition of the genus *Onychoprion* Wagler. (*Cf.* Mathews, Birds Australia, II, pt. 4, 1912, p. 388.)

Melanosterna Blyth, Journ. As. Soc. Bengal, XV, 1846, p. 373 (type, *Sterna anætheta* Scopoli). By recognition of this as a genus (*cf.* Mathews, Birds Australia, II, pt. 4, 1912, p. 395), *Sterna anætheta* becomes *Melanosterna anætheta recognita*. (*Cf.* also Stone, Auk, XXXIII, 1916, pp. 429-430.)

Phœbastria Reichenbach, Nat. Syst. Vögel, 1852, p. V (type, *Diomedea albatrus* Pallas). Recognized as a genus (*cf.* Mathews, Birds Australia, pt. 3, 1912, pp. 242-244). Includes the following North American species now contained in *Diomedea*:

Phœbastria nigripes (Audubon).

Phœbastria albatrus (Pallas).

Phœbastria immutabilis (Rothschild).

Puffinus borealis Cory becomes **Puffinus kuhlii borealis** Cory, since it is now regarded as a subspecies of *Puffinus kuhlii* (Boie). (*Cf.* Bannerman, Bull. Brit. Orn. Club, XXXV, 1915, p. 121.)

Puffinus griseus (Gmelin) becomes **Puffinus griseus chilensis** Bonaparte (*Puffinus chilensis* Bonaparte, Consp. Gen. Avium, II, 1856, p. 202; Chile) in so far as records from the Pacific Coast of North America are concerned. (*Cf.* Mathews, Birds Australia, II, pt. I, 1912, p. 96.)

Puffinus griseus stricklandi Ridgway, in Baird, Brewer and Ridgway, Water Birds North Amer., II, 1884, p. 390 (North Atlantic Ocean). Revived as a subspecies, for *Puffinus griseus* from the Atlantic Ocean. (*Cf.* Mathews, Birds Australia, II, pt. I, 1912, p. 96.)

Phaethon americanus Grant becomes **Phaethon catesbyi** Brandt, Bull. Sci. Acad. Imp. St. Petersb., IV, No. 7, 1838, p. 98, in text (Bermuda Islands), since the latter proves to refer to the same bird, and is of much earlier date. (*Cf.* Mathews, Auk, XXXII, 1915, pp. 195-197.)

Pœcilonetta bahamensis (Linnaeus). *Anas bahamensis* Linnaeus, Syst. Nat., ed. 10, I, 1758, p. 124 (Bahama Islands). Taken at Cape Canaveral, Florida. (*Cf.* Brooks, Auk, XXX, 1913, p. 110.)

Dafila acuta americana (Bonaparte) becomes **Dafila acuta tzitzihua** (Vieillot) (*Anas tzitzihua* Vieillot, Nouv. Dict. d'Hist. Nat., V, 1816, p. 163; Mexico), as the description of the latter evidently applies to the same bird. (Cf. Thayer and Bangs, Auk, XXXIII, 1916, p. 45.)

Melanitta Boie. Recognized as a genus (cf. Miller, Auk, XXXIII, 1916, pp. 278-281) to include the following North American species now in the genus *Oidemia*:

Melanitta fusca (Linnæus).

Melanitta deglandi (Bonaparte).

Melanitta perspicillata (Linnæus).

Ardea herodias hyperoncha Stone, Auk, XXXIII, 1916, p. 426 (error), should be **Ardea herodias hyperonca** Oberholser.

Tringa canutus (Linnæus) becomes **Canutus canutus rufus** (Wilson) (*Tringa rufa* Wilson, Amer. Ornith., VII, 1813, p. 43; shores of the Middle States), since the American bird proves to be subspecifically separable from that of the Old World. (Cf. Mathews, Birds Australia, III, pt. 3, 1913, pp. 272-273.)

Limnocinclus Gould, Handb. Birds Australia, II, 1865, p. 254 (type, *Totanus acuminatus* Horsfield). Recognized as a genus to include *Pisobia acuminata* Horsfield (= *Pisobia aurita* of the A. O. U. Check-List). (Cf. Mathews, Birds Australia, III, pt. 3, 1913, pp. 259-262.)

Pisobia aurita (Latham) becomes **Limnocinclus acuminatus** (Horsfield) (*Totanus acuminatus* Horsfield, Trans. Linn. Soc. Lond., XIII, May, 1821, p. 192; Java); since *Tringa* [= *Pisobia*] *aurita* Latham is the same as *Actitis hypoleuca* (Linnæus). (Cf. Mathews, Birds Australia, III, pt. 3, 1913, pp. 258-259.)

Pelidna alpina sakhalina (Vieillot) becomes **Pelidna alpina pacifica** Coues (*Pelidna pacifica* Coues, Proc. Acad. Nat. Sci. Phila., 1861, p. 189), since the North American bird proves to be separable from that of eastern Asia. (Cf. Thayer and Bangs, Proc. New Engl. Zool. Club, V, 1914, p. 17.)

Arenaria interpres oahuensis (Bloxham). *Tringa oahuensis* Bloxham, Voyage Blonde, Sandwich Is., 1826, p. 251 (Sandwich Islands). Recognized as a subspecies for the birds from the Pacific Coast of North America now referred to *Arenaria interpres interpres*. (Cf. Mathews, Birds Australia, III, pt. I, 1913, pp. 5-10.)

Lagopus lagopus lagopus (Linnæus) becomes **Lagopus lagopus albus** Gmelin (*Tetrao albus*, Gmelin, Syst. Nat., I, pt. II, 1789, p. 750; Hudson Bay), since the Northwestern North American bird is subspecifically separable from the European, which is *Lagopus lagopus lagopus* (Linnæus). (Cf. Clark, Proc. U. S. Nat. Mus., XXXVIII, 1910, pp. 52-53.) Range: Hudson Bay to Alaska.

Lagopus rupestris kelloggæ Grinnell. New subspecies. Grinnell, Univ. Calif. Publ. Zool., V, No. 12, March 5, 1910, p. 383 (Zaikof Bay, Montague Island, Prince William Sound, Alaska).

Chlorœnas Reichenbach, Nat. Syst. Vögel, 1852, p. XXV (type, *Columba*

fasciata Say). Recognized as a genus (*cf.* Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VII, 1916, pp. 283-307). Includes the following North American species now in the genus *Columba*:

Chlorœnas fasciata fasciata (Say).

Chlorœnas fasciata vioscæ (Brewster).

Chlorœnas flavirostris flavirostris (Wagler).

Patagiœnas Reichenbach, Nat. Syst. Vögel, 1852, p. XXV (type, *Columba leucocephala* Linnæus). Recognized as a genus (*cf.* Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VII, 1916, pp. 308-315). Includes the following North American species now in the genus *Columba*.

Patagiœnas leucocephala (Linnæus).

Patagiœnas squamosa (Bonnaterre).

Melopelia asiatica mearnsi Ridgway. New subspecies. Ridgway, Proc. Biol. Soc. Wash., XXVIII, May 27, 1915, p. 107 (5 miles north of Nogales, Ariz.).

Chæmepelia passerina bermudiana (Bangs & Bradlee) becomes **Chæmepelia passerina bahamensis** Maynard (*Chamæpelis bahamensis* Maynard, Amer. Exchange and Mart, III, 1887, p. 33), since the bird from the Bermuda Islands proves to be inseparable from that of the Bahama Islands. (*Cf.* Todd, Annals Carnegie Mus., VIII, 1913, pp. 568-571.)

Oreopeleia Reichenbach, Nat. Syst. Vögel, 1852, p. XXV (type, *Columba martinica* Linnæus). Recognized as a genus (*cf.* Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VII, 1916, pp. 467-495). Includes the following North American species now in the genus *Geotrygon*:

Oreopeleia chrysia (Salvadori).

Oreopeleia montana (Linnæus).

Hierofalco Cuvier. Recognized as a genus (*cf.* B. O. U. Committee, List Brit. Birds, 1915, pp. 147-148). Includes the following North American species now in the genus *Falco*:

Hierofalco rusticolus candicans (Gmelin).

Hierofalco rusticolus obsoletus (Gmelin).

Hierofalco mexicanus (Schlegel).

Falco fuscocærulescens Vieillot becomes **Falco fuscocærulescens septentrionalis** subsp. nov., Todd, Proc. Biol. Soc. Wash., XXIX, June 6, 1916, p. 98 (Fort Huachuca, Ariz.).

Cerchneis Boie. Recognized as a genus (*cf.* Chapman, Bull. Amer. Mus. Nat. Hist., XXXIV, 1915, pp. 372-382). Includes the following North American species now in the genus *Falco*:

Cerchneis tinnunculus (Linnæus).

Cerchneis sparveria sparveria (Linnæus).

Cerchneis sparveria phalæna (Lesson).

Cerchneis sparveria peninsularis (Mearns).

Cerchneis sparveria paula Howe and King.

Cerchneis sparverioides (Vigors).

Otus asio asio (Linnæus) becomes **Otus asio nævius** Gmelin (*Strix*

- naevia* Gmelin, Syst. Nat., I, pt. I, 1788, p. 289; New York); since *Otus asio asio* of the A. O. U. Check-List refers properly to the Florida race now called *Otus asio floridanus*. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 690-692.)
- Otus asio floridanus** (Ridgway) becomes **Otus asio asio** (Linnæus); since birds from South Carolina, the type locality of the latter, are referable to the Florida race. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 687-690.)
- Bubo virginianus neochanes** Stone, Auk, XXXIII, Oct, 1916, p. 427 (error) should be **Bubo virginianus neochorus** Oberholser, Proc. Biol. Soc. Wash., XXVII, 1914, p. 46 (Fox Island River, Newfoundland).
- Surnia ulula ulula** (Linnæus) becomes **Surnia ulula pallasii** Buturlin, Ornith. Monatsb., XV, June, 1907, p. 100 (Siberia); since the Alaska record of the species is referable to the latter. (Cf. Hartert, Vög. Pal. Fauna, VIII, 1913, pp. 1012-1013.)
- Glaucidium phalœnoides** (Daudin) becomes **Glaucidium brasilianum ridgwayi** Sharpe (*Glaucidium ridgwayi* Sharpe, Ibis, 1875, p. 55, in text; Guatemala); since the Mexican bird is a recognizable race, and a subspecies of the South American *Glaucidium brasilianum* (Gmelin). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 798-803.)
- Micropallas whitneyi idoneus** Ridgway (cf. Stone, Auk, XXXIII, 1916, p. 427) should be **Micropallas whitneyi idonea** Ridgway, since the gender of the subspecific name should conform to that of the genus.
- Conuropsis carolinensis interior** Bangs becomes **Conuropsis carolinensis ludoviciana** (Gmelin), since birds from Louisiana, the type locality of *Psittacus ludovicianus* Gmelin, Syst. Nat., I, pt. i, 1788, p. 347, are referable to the interior race. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VII, 1916, p. 150.)
- Trogon ambiguus** Gould becomes **Trogonurus ambiguus ambiguus** (Gould), by recognition of the genus *Trogonurus* Bonaparte (Ateneo Italiano, II, No. 8, May, 1854, p. 129; type, *Trogon collaris* Vieillot), and of an extralimital subspecies. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. V, 1911, pp. 761-773.)
- Megaceryle** Kaup becomes **Streptoceryle** Bonaparte, (Ateneo Italiano, II, 1854, p. 320; type, *Alcedo alcyon* Linnæus), because the latter is recognized as a genus and the former is consequently found to be extralimital. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 407-421). The genus *Streptoceryle* includes the following North American forms:
- Streptoceryle alcyon alcyon** (Linnæus).
Streptoceryle alcyon caurina (Grinnell).
Streptoceryle torquata torquata (Linnæus).
- Ceryle americana septentrionalis** Sharpe becomes **Chloroceryle americana septentrionalis** (Sharpe), by recognition of the genus

Chloroceryle Kaup., Verh. Naturhist. Vereins Hessen, II, 1848, p. 68 (type, *Alcedo superciliosa* Linnæus). (Cf. Miller, Bull. Amer. Mus. Nat. Hist., XXXI, 1912, pp. 264-311; and Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 407, 421-441.)

Dryobates villosus leucomelas (Boddært) becomes **Dryobates villosus septentrionalis** (Nuttall) (*Picus septentrionalis* Nuttall, Man. Ornith. U. S. and Canada, ed. 2, I, 1840, p. 684; Saskatchewan River, Saskatchewan, Canada); since *Picus* [= *Dryobates*] *leucomelas* Boddært proves to be the same as *Dryobates villosus villosus* (Linnæus). (Cf. Oberholser, Proc. U. S. Nat. Mus., XL, 1911, p. 604.)

Dryobates borealis (Vieillot) becomes **Phrenopicus borealis** (Vieillot), by recognition of the genus *Phrenopicus* Bonaparte, Ateneo Italiano, II, 1854, p. 123 (type, *Picus borealis* Vieillot). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 268-271.)

Balanosphyra Ridgway. New genus. Ridgway, Proc. Biol. Soc. Wash., XXIV, 1911, p. 34 (type, *Picus formicivorus* Swainson). Includes the following North American woodpeckers now in the genus *Melanerpes*:

Balanosphyra formicivora formicivora (Swainson).

Balanosphyra formicivora aculeata (Mearns).

Balanosphyra formicivora bairdi (Ridgway).

Balanosphyra formicivora angustifrons (Baird).

Balanosphyra formicivora formicivora (Swainson). Recorded from south central Texas. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 104.)

Antrostomus vociferus vociferus (Wilson) becomes **Setochalcis vocifera vocifera** (Wilson), by institution of the new genus *Setochalcis*. (Cf. Oberholser, Bull. U. S. Nat. Mus., No. 86, 1914, p. 12.)

Antrostomus vociferus macromystax (Wagler) becomes *Setochalcis vocifera arizonæ* (Brewster) (*Antrostomus vociferus arizonæ* Brewster, Bull. Nuttall Orn. Club, VI, 1881, p. 69; Chiricahua Mts., Ariz.), by recognition of the Arizona race as distinct from that of central Mexico. (Cf. Oberholser, Bull. U. S. Nat. Mus., No. 86, 1914, p. 12.)

Chordeiles virginianus aserriensis Cherrie, Auk, XIII, 1896, p. 136 (valley of Aserri River, near San José, Costa Rica). Recognized as the form breeding in central southern Texas. (Cf. Oberholser, Bull. U. S. Nat. Mus., No. 86, 1914, p. 71.)

Cypseloides niger borealis (Kennerly) becomes **Nephæcetes niger borealis** (Kennerly), by recognition of the genus *Nephæcetes* Baird, Rep. Explor. and Surv. R. R. Pac., IX, 1858, p. 142 (type, *Hirundo nigra* Gmelin). (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. V, 1911, pp. 703-710.)

Uranomitra salvini (Brewster) becomes **Amizilis salvini** (Brewster), by the combining of *Uranomitra* with the genus *Amizilis*. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. V, pp. 406, 429-430.)

- Tyrannus melancholicus satrapa** (Cabanis and Heine). *Laphyctes satrapa* Cabanis and Heine, Mus. Hein., II, 1859, p. 77 (Lichtenstein MS.) (Guiana). Taken at Scarborough, Maine. (Cf. Norton, Auk, XXXIII, 1916, p. 382.)
- Agelaius phoeniceus phoeniceus** (Linnæus) becomes **Agelaius phoeniceus predatorius** (Wilson) (*Sturnus predatorius* Wilson, Amer. Ornith., IV, 1811, p. 30, pl. XXX, figs. 1, 2; eastern Pennsylvania); since *Agelaius phoeniceus phoeniceus* of the A. O. U. Check-List refers properly to the Florida race now called *Agelaius phoeniceus floridanus*. (Cf. Mearns, Proc. Biol. Soc. Wash., XXIV, 1911, pp. 226-227.)
- Agelaius phoeniceus floridanus** Maynard becomes **Agelaius phoeniceus phoeniceus** Linnæus, since birds from South Carolina, the type locality of the latter, are referable to the Florida race. (Cf. Mearns, Proc. Biol. Soc. Wash., XXIV, 1911, pp. 226-227.)
- Loxia curvirostra sitkensis** Grinnell, Univ. Calif. Pub. Zool., V, Feb. 18, 1909, p. 223 (Windfall Harbor, Admiralty Island, Alaska). Recognized as a tenable subspecies (cf. Brooks, Bull. Mus. Comp. Zool., LIX, September, 1915, p. 406). Range: Coast district of southeastern Alaska.
- Passerculus sandwichensis brooksi** Bishop. New subspecies. Bishop, Condor, XVII, Sept., 1915, p. 187 (Chilliwack, B. C.). Range: southwestern British Columbia to western Washington; in winter to California.
- Melospiza melodia fisherella** Oberholser. New subspecies. Oberholser, Proc. Biol. Soc. Wash., XXIV, Dec. 23, 1911, p. 251 (Honey Lake, near Millford, Calif.). Range: eastern California, western Nevada, and central southern Oregon.
- Melospiza melodia mailliardi** Grinnell. New subspecies. Grinnell, Univ. Calif. Publ. Zool., VII, No. 5, Feb. 18, 1911, p. 197 (Rancho Dos Rios, near Modesto, Calif.). Range: Lower San Joaquin valley, California.
- Guiraca cærulea salicaria** Grinnell. New subspecies. *Guiraca cærulea salicarius* Grinnell, Proc. Biol. Soc. Wash., XXIV, June 16, 1911, p. 163 (Santa Ana River, near Colton, Calif.). Range: central and southern California.
- Petrochelidon lunifrons lunifrons** (Say) becomes **Petrochelidon albifrons albifrons** (Rafinesque) (*Hirundo albifrons* Rafinesque, Kentucky Gazette, February 14, 1822, p. 3, col. 4; Newport, Kentucky); since Rafinesque's name is clearly identifiable as *Hirundo* [= *Petrochelidon*] *lunifrons* Say and is of earlier date. (Cf. Rhoads, Auk, XXIX, 1912, pp. 192-195.)
- Penthestes hudsonicus nigricans** Townsend. New subspecies. Townsend, Auk, XXXIII, Jan., 1916, p. 74 (Shekatika, Saguenay County, Quebec). Range: Forested region of Labrador Peninsula.
- Corthylio** Cabanis, Journ. f. Ornith., I, Jan., 1853, p. 83 (type, *Molacilla*

calendula Linnaeus). Recognized as a genus (cf. Miller, Auk, XXXII, 1915, pp. 234-236). Includes the following North American species now in *Regulus*:

Corthylio calendula calendula (Linnaeus).

Corthylio calendula grinnelli (Palmer).

Corthylio obscurus (Ridgway).

Regulus calendula obscurus Ridgway becomes ***Corthylio obscurus*** (Ridgway), because considered specifically distinct from *Corthylio calendula*. (Cf. Miller, Auk, XXXII, 1915, pp. 235-236.)

II. REJECTIONS AND ELIMINATIONS.¹

****Melopelia asiatica trudeauui*** (Audubon) = *Melopelia asiatica asiatica*. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VII, pp. 378-382.)

Strix occidentalis huachucae Swarth (Univ. Calif. Publ. Zool., VII, No. I, May 26, 1910, p. 3 [Huachuca Mts., Ariz.]) = *Strix occidentalis lucida* (Nelson). (Cf. Oberholser, Proc. U. S. Nat. Mus., XLIX, July 26, 1915, p. 253.)

****Glaucidium gnoma vigilante*** Grinnell = *Glaucidium gnoma californicum* Selater. (Cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, p. 791.)

GENERAL NOTES.

Type of the Large-billed Puffin.— In the third edition of the A. O. U. Check-List, 1910, p. 27, the name *Fratercula arctica naumanni* is stated as "based upon *Mormon glacialis* of Naumann, Isis, 1821, 782, pl. VII, fig. 2.

In conducting a study of the Puffins brought from Labrador by the Bowdoin College Expedition of 1891,² I found it desirable to examine typical representatives of *Fratercula arctica* (Linnaeus) from Europe, and also *Fratercula arctica glacialis* (Naumann) as then understood.

I was at the time aware that the status of the latter had been questioned by some writers, and as I became convinced that the bird was recognizable, wished to emphasize the fact. As the bird had no place in the Labrador fauna it was disposed of in a footnote.³ I now think that in the endeavor to treat the matter briefly, and credit Naumann with its discovery I may

¹ Eliminations of forms already in the A. O. U. Check-List, the Sixteenth Supplement or the First Annual List, are prefixed with an asterisk.

² Proc. Portland Soc. N. H., II, p. 140-145.

³ I. c. p. 144.

have erred in over emphasizing his work, without specifying a type for the new name found necessary. It is however, evident from the same paper, that I had for study a specimen of the bird. Since Naumann did not indicate a type for his figure and description, and since a new name had to be given the bird to which his description applies, I consider the specimen which I had in hand, really the convincing element in the consideration, (number 86019 of the United States National Museum, from Spitzbergen) to be the type of *Fratercula arctica naumanni*.—ARTHUR H. NORTON, Portland, Maine.

The Possibility of *Puffinus bermudæ* Nichols & Mowbray in the North Atlantic.—An old Shearwater skin presented by G. A. Boardman in 1867 to the Boston Society of Natural History, now M. C. Z. 73408, taken on the coast of Maine or New Brunswick by Dresser, was originally determined as *Puffinus puffinus* (Brünnich). Recently Mr. R. C. Murphy compared this specimen with the type of *P. f. bermudæ* Nichols & Mowbray, and found it very similar.

It therefore seems reasonable to suspect that former records of the Manx Shearwater in the northwest Atlantic might really have been this Bermuda form.—W. SPRAGUE BROOKS, Boston Society of Natural History.

Sooty Tern in New Jersey.—On September 7, 1916, I obtained an adult female Sooty Tern (*Sterna fuscata*) at Corson's Inlet, Cape May County, New Jersey. This specimen, which is in perfect adult plumage, was resting in the long grass in the sand dunes, a very short distance back from the beach. It was very tame and allowed me to get quite close before flushing. This specimen is now No. 2817 of my collection.—WHARTON HUBER, Gwynedd Valley, Pa.

Coloration of Down in Adult Ducks.—It is not impossible that the writer has been alone in his ignorance of the fact that in a goodly number of ducks there is a great difference in the color of the down during the winter and the summer months. My observations of summer down have been taken entirely from the nests accompanying sets of eggs in my collection, which would seem beyond a doubt to furnish correct data. These nests contained eggs only of the duck under discussion, which makes it almost a certainty that the down could have come from no other species (I specify this for the reason that it is not uncommon in some localities for two or more species of ducks to lay in the same nest). Down from winter females has been used in all comparisons, as it seems unlikely that the males would contribute to the nesting material.

The down seen in nests of the Mallard (*Anas boschas*) found in April and May is many shades darker than the down on birds of this species shot in October, November, and December. In the winter it is a very light brownish gray, while in the summer it is changed to a dark, sooty brown.

While this difference is most marked in the Mallard, the same facts hold good to a large extent in my nests of the following species of ducks:—Red-breasted Merganser (*Merganser serrator*), Green-winged Teal (*Nettion carolinense*), Cinnamon Teal (*Querquedula cyanoptera*), and Pintail (*Dafila acuta*), all of which show the down to be considerably darker than in birds of the same species shot in the winter. In the following species the same variation holds good, although in a somewhat lesser degree:—Canvas-back (*Marila valisineria*), Scaup Duck (*Marila marila*), and Lesser Scaup Duck (*Marila affinis*).

There would seem to be a possibility, even though a scant one, that this difference in coloration might be caused by dirt from the parent bird soiling the down. This theory is made practically untenable by the fact that in the following species there is very little difference between the down found in the nests and that on females shot during the winter months:—Merganser (*Mergus americanus*), Wood Duck (*Aix sponsa*), and Redhead (*Marila americana*). Lack of material at hand prevents any further comparison, but these few notes may prove of interest to someone as ignorant on the subject as myself.

These notes are not sent in with the wish to publish a well established fact, as possibly the observations of other collectors in different sections of the country may show very different results. However, the nesting season is close at hand, so it would seem to be worth while putting in print the results of my own observations in order that the subject may be brought before other observers as a matter for more extended study.—J. H. BOWLES, *Tacoma, Wash.*

Killdeer (*Oxyechus vociferus vociferus*) in Massachusetts.—Upon the authority of many of the older ornithological writers it is evident that this species bred in earlier years at various widely separated stations in the state of Massachusetts. In more recent years however, it has become rare, so much so, as to make its occurrence noteworthy. It is with a sense of pleasure and satisfaction that at this time I can submit evidence of an increase in its numbers and frequency in this northeastern portion of the State at least, an increase due quite probably to the better protective laws now in force. The following notes briefly record its occurrence in a region where it has been absent for a number of years.

West Newbury, Mass., May 24, 1915, 5.30 A. M. While walking along a road in the open country I was attracted by the petulant cry of a Killdeer Plover, and in a moment discovered the bird flying low and coming toward me. He alighted about 60 yards distant in an open pasture, offering me a very good view, and an opportunity to identify him with certainty if his voice had not been sufficiently convincing. After a few moments of erratic running about in the open pasture he took flight in a southerly direction.

West Newbury, Mass., Sept. 6, 1915 — 3 P. M. Three Killdeer Plover noted flying northward at great heights, their unmistakable notes bespeaking their presence and identity.

West Newbury, Mass., Oct. 18, 1915 — 11 P. M. Hear the notes of Killdeer Plover overhead, presumably from several birds migrating.

Newburyport, Mass., May 5, 1916. Two Killdeers walking about on ploughed fields.

June 23, 1916. Probably the same birds seen again in the same field.

Jan. 24, 1916. About a half mile from the above mentioned field heard the notes of a Killdeer and on investigation found four adult birds, running about erratically and uneasily amid the sparse grass of the pasture. They allowed me, however, to approach quite closely and I had an excellent opportunity to observe their coloring. By an odd coincidence, in making my way back to the road, and about 300 yards from where the Killdeer were seen, I flushed three Upland Plover (*Bartramia longicauda*). These last have been sufficiently scarce of late to make their occurrence interesting.

June 28, 1916. In the same locality as above mentioned, saw one Killdeer Plover.— S. W. BAILEY, *Pittsfield, Mass.*

Note on the Passenger Pigeon.— About a year and one half ago, the Cornell University Museum came into the possession of a mounted adult male Passenger Pigeon through the kindness of its collector, Mr. J. L. Howard of Clyde, N. Y., a justice of that city. He is now over 80 years old and had the bird mounted by a local taxidermist, George L. Perkins, who is now dead. According to Mr. Howard's memory the bird was taken in 1909, 11 years after the last certain capture (Sept. 14, 1898) of a Passenger Pigeon in the State. On the bottom of the mount is the legend, "Geo. L. Perkins, July 5, 1898," — a date in close agreement with Mr. Wilbur's record (Sept. 14, 1898) at Canandaigua, N. Y. The mount might be an old mount from some other bird. Mr. Howard's letter follows:

"My account of the shooting of the Passenger Pigeon must be short as there was but little of it. Upon the John Heit farm about $2\frac{1}{2}$ miles s. w. of Clyde and near the Clyde River is, and has been longer than I remember, a small pond nearly round and about 3 rods in diameter. A low hill upon the south reaches to the water's edge forming a sloping beach. Years ago this pond was in a large forest. Now this was always, as long as there were any pigeons, a favorite place for them to come and drink. Six years ago (1909) I think, I took my gun and went to this pond in hopes I might get a Blue Heron, which I very much wanted. There were tracks of herons, plover and other birds in the mud around the shores, so I sat down in some bushes and pulled them up around me so as to partly conceal myself, facing the East where I could see a long distance. Presently I saw, far to the East, a bird coming directly towards me. I took it to be a Pigeon Hawk. It flew off to my right and turned in behind me and the next instant I heard its wings beating for a short span and then I heard to my right and very near the loud and distinct crow of a Wild Pigeon. Well that was a surprise. I had not seen a pigeon in fifteen years or more and now I sat within a few feet of one and he kept on crowing. Well I went

to work at those bushes, pulling them apart when suddenly I saw him standing upon the top of a fence post and still crowing.

I picked up the gun and placed it to the shoulder and old hunter and old trapshooter as I was I could not hold the gun still I trembled so. But I took a trap-shooter's chance and got the bird."—S. C. BISHOP and A. H. WRIGHT, *Cornell University, Ithaca, N. Y.*

Feeding Habit of the Sparrow Hawk.—The month of March, 1916, was spent by the writer in the longleaf pine forests of northern Louisiana. In the region of lumbering operations fires were of frequent occurrence. The hawks took full advantage of the action of the fire in driving out insects, small reptiles, and rodents, and, in spite of the great heat and intense black smoke arising from the resinous wood, the birds would not only dash past within a few feet of the flames, but would actually alight on stubs and fallen branches in smoke so thick that they were frequently lost to view. In the vicinity of every fire observed hawks were present and as many as twenty individuals were noted at one time.—A. W. SHORGER, *Madison, Wisc.*

The Barn Owl (*Aluco pratincola*) in Western New York.—The writer wishes to record the capture of the Barn Owl in the town of Eden, Erie Co., N. Y. Noting a mounted adult specimen of this species in the taxidermist's shop at Hamburg, he was surprised to learn that the bird was taken on a large produce farm about fifteen miles southwest of Buffalo. Subsequent correspondence with the owner of the farm revealed the fact that it was captured alive in a silo during the month of April, 1916. The bird was first seen in the barn about 5 o'clock in the afternoon, but flew into the silo when attempts were made to catch it. Here it was easily procured by closing a small door.

Rumors of the occurrence of this species in the town of Eden have come to the writer's attention several times within the past ten years. However, Mr. Wm. D. Henry, the owner of the present specimen, states that he never saw a bird of this kind before and is inclined to regard such statements as erroneous.—THOMAS L. BOURNE, *Hamburg, N. Y.*

An Unrecorded Bird from the Bahamas.—When compiling my list of Bahama birds (Shattuck, *The Bahama Islands*, 1905, pp. 347-368), I overlooked a specimen of the Kingbird (*Tyrannus tyrannus*) taken at Nassau, New Providence, April 22, 1864, by Lieutenant Fitzgerald and now in the U. S. National Museum, No. 33171. Mr. Ridgway also failed to record this specimen in Bull. U. S. Nat. Museum No. 50, Part IV, 1907, 689, and as it has not been previously or subsequently recorded from the Islands to my knowledge, I have thought it best to put the specimen upon record.—J. H. RILEY, *Washington, D. C.*

Blue Jay in Jefferson Co., Colorado.—I was startled on the morning of Sept. 24, 1916, to hear the calls of Blue Jays (*Cyanocitta cristata cristata*)

in the orchard of our farm in Jefferson County, Colorado, located a mile and a half south of the little town of Broomfield. I hurried to the spot whence the cries came and found that I was not mistaken in the notes with which I was familiar in my boyhood days in Illinois, for, there in a high cottonwood tree in the midst of the orchard were two Blue Jays. They were wild and restless and flew off at once in a southwesterly direction, passing near enough, however, for positive identification. The following day my son saw one in the same tree and it flew in the same direction.

Blue Jays have previously been observed around Wray, in the eastern part of our State but it is my impression that this is an extreme western record.—A. H. FELGER, *Denver, Colo.*

Note on the Bronzed Grackle in Maine.—Mention should be made, I think, of the increase in the numbers of the Bronzed Grackle (*Quiscalus quiscula aeneus*) in and about Portland, Maine, since it was recorded,¹ many years ago, as "rare,—even in the migration uncommon." It is nowadays one of the common species of this part of southwestern Maine, and during the migration periods sometimes occurs in large flocks. On April 13, 1915, I saw at least six hundred birds together in the town of South Portland. The possibility suggests itself that more than one geographical race may be represented in such an increase. Recent specimens in evidence are lacking.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

A Bird new to the North American Fauna.—The Bureau of Fisheries has transferred to the collection of the U. S. National Museum a fine adult male Pine Grosbeak taken on the tundra of St. George Island, Pribilofs, Alaska, Oct., 1915. This specimen proves to be *Pinicola enucleator kamtschathensis* (*Corythus enucleator kamtschathensis* (sic) Dybowski, Bull. Soc. Zool. France, 8, 1883, 367; founded on Taczanowski, t. c., 7, 1882, 394), and measures as follows: wing, 112; tail, 92; culmen, 14.5; depth of bill at base, 11.5; width of bill at base, 9.5; tarsus, 21.5; middle toe, 15 mm. These measurements are almost exactly duplicated by a specimen taken by Mr. A. H. Clark at Petropaulski, Kamchatka, June 17, 1906 (Proc. U. S. Nat. Museum, 38, 1910, 64).—J. H. RILEY, *Washington, D. C.*

The Evening Grosbeak (*Hesperiphona vespertina vespertina*) in Southern New Jersey and Pennsylvania.—On January 29, 1917, at about noon in the midst of a cold rain I was walking along a road which passed by a little clearing near a saw-mill at New Lisbon, New Jersey. I heard a series of loud chirpings, something like the chirping of English Sparrows only more resonant. On looking up I saw a small yellow locust tree by the side of the road almost filled by a flock of Evening Grosbeaks. The birds kept motionless for some time and I had an opportunity to count them three times in succession and found that the flock consisted of seventy-four.

¹ Proc. Portland Society Nat. Hist., Dec. 4, 1882, p. 16.

Some six of them were males. I had never seen the bird before, but it was, of course, easy to identify it by the thick white beak and by the bright gold, ivory white and velvety black of the males. A male Evening Grosbeak in full plumage with its black head, golden forehead, thick white beak, black and white wings, golden back and breast and forked black tail impresses me as the most spectacular bird that I have ever seen. Probably this was owing to the winter background of cold rain, brown fields and leafless trees. New Lisbon is in the center of the pine-barren region. This flock seemed to be feeding on the locust tree as one of the birds had a pod in its mouth. On subsequent occasions I would frequently find them in locust trees and there were always on the ground pieces of freshly opened pods. The favorite food during the times that I observed them appeared to be the pits of the common Wild Cherry (*Prunus serotina*). They fed in a circle in the clearing about one hundred yards in diameter and were frequently found on the ground under the various Wild Cherry trees in this tract. The ground under these trees was covered with cherry-stones neatly split in half, while the droppings of the birds showed that they had fed there for a considerable space of time. The birds were restless, but not particularly wild. They would feed together in the trees for a time and then fly all together to the ground and then back again to the trees. I was able to approach several times within about thirty feet of the flock. On inquiry the miller reported that he had never seen or heard of these birds before although he had lived in that part of the country all his life. They had a clear trilling note besides the chirp above mentioned. At times they would all join in a chirring chorus. They reminded me very much of a flock of overgrown Goldfinches with their forked tails and the gold and black and white of their plumage, just as a flock of Pine Grosbeaks makes one think of a flock of overgrown Purple Finches. I am under the impression that I heard the call-note of this bird the night before in a swamp near my camp though at the time I thought that it was the chirp of some wintering Robins.

I saw and studied this particular flock on January 29, again on February 11, February 12, February 17 and February 22. On February 11 and 12 the flock had been reduced to about forty birds with only three males. On February 17 there were not more than twenty birds there and not more than one or two males. On the afternoon of February 17 a friend of mine reported that he had found a detached pair. On February 22 there had been a light fall of snow and the birds were not found at all in the usual place. Two flew overhead in the early afternoon and in the middle of the afternoon four females were found in the top of a pitch-pine tree. The miller told me that every morning this flock would come into his dooryard at dawn and even feed on crumbs put out on the porch by the children. He said that the full flock at that time was nearly a hundred and that even so late as February 21 there had been seventy or eighty of them in his yard. His figures, of course, were only estimated. A flock of 65 was seen by Dr. E. P. Darlington, at Browns-Mills-in-the-Pines, a little farther east, on January 10, 1917, and they had been seen a number of times by Miss Rachel Weston near the Browns-Mills Inn. This is doubtless the

same flock which I studied at New Lisbon. So far as I can find the other records of Evening Grosbeaks in this vicinity are as follows:

December 5, 1916, at Cinnaminson, N. J., Charles Evans.

December 24, at Smithville, N. J., N. D. W. Pumyea.

December 26, at Westville, N. J., Julian K. Potter, and on December 31, on Mill Creek at Ardmore, Pa., one male was seen by W. J. Serrill. Doctor Stone also advises me that a flock was reported at Hammonton, N. J., on February 22, 1917, by Mr. Geo. W. Bassett, who says they have been present most of the winter feeding mainly on the seeds of the box elder. A single bird was also seen at Lumberton, N. J., March 14, 1917, by Mr. B. F. Clayberger.—SAMUEL SCOVILLE, JR., Philadelphia, Pa.

First Recorded Nesting of Bachman's Sparrow in Pennsylvania.—During the summer of 1913 the writer had the good fortune to see the Bachman's Sparrow (*Peucaea aestivalis bachmani*) as a summer resident in southwestern Pennsylvania. At that time the birds were noted at several places in southern Greene Co., close to the Mason and Dixon line.

A close watch was made for the birds during successive seasons but none were seen until the spring of 1916. On May 12, while I was instructing a field class in bird-life, we encountered a pair of Bachman's Sparrows. My attention was first called to them by the continual singing of the male. The female was soon located and the pair carefully watched. The female soon gathered nesting material and flew to a cluster of weeds just inside the border of an open grove of large white oak trees. I made a search and soon found an almost completed nest.

Upon returning to the nest in about one week I found the bird at home protecting her five white eggs. The birds were carefully examined after collecting and proved to be *Peucaea aestivalis bachmani*. The skins of this pair of birds are now in Waynesburg College collection. The set of 5 eggs and nest are in the collection of Mr. James Carter, Waynesburg, Pa. — S. S. DICKEY, Waynesburg, Pa.

Bohemian Waxwings at Seattle, Wash.—During the present winter, 1916-1917, this region has had some remarkable invasions of certain species of birds, the most noticeable perhaps being the Bohemian Waxwing (*Bombycilla garrulus*). As nearly as can be ascertained this species made its first appearance about December 10 in flocks of considerable size, but on the 26th or 27th the great body of the birds arrived numbering thousands of individuals, which thereafter for some considerable period could be observed almost every day within a comparatively restricted area some six miles in length along the eastern boundary of the city, adjacent to Lake Washington. This was accounted for by the fact that within this particular section was an abundant food supply in the form of the berries of the Madrona tree (*Arbutus menziesii*) which had fruited with unusual abundance the past season and of which the Waxwings appeared very fond, it not being uncommon at times to count in one of the larger trees upwards of five hundred of the birds.

Always associated with the Waxwings were flocks of the Western Robin (*Planesticus migratorius propinquus*), of this species the individuals numbered several thousands, and at times when suddenly startled, this immense body of birds would arise scattering in every direction, and then begin to congregate in flocks. On some occasions they would all amalgamate into one vast flock and after flying about, would again break up into small flocks which alighted in the berry laden trees and immediately resumed feeding until again disturbed, when these evolutions would be repeated. At all times the soft rolling chatter of the many Waxwings could be heard, which added to the interesting spectacle. On one particular occasion apparently all the individuals in a large portion of the section became associated, forming a flock that by careful estimate was an eighth of a mile in length and of considerable width.

Many times in these flocks of Bohemian Waxwings we observed a few Cedar Waxwings (*Bombycilla cedrorum*), and also in the same locality small flocks of Pine Siskins (*Spinus pinus*) and Willow Goldfinches (*Astragalinus tristis salicamans*), which would sometimes mingle with the former in flight but disassociate when the Waxwings alighted.

About January 25 the supply of Madrona berries in the section described became practically exhausted, and thereafter the Waxwings were seen in smaller flocks and became scattered throughout the city in quest of suitable food. On many occasions the birds were seen in the parks of the city and about the residences wherever there was shrubbery that might bear berries, and this continued until about February 15, after which date we have failed to note them.

How extended the incursion of this species has been we do not know, but have received reports of its occurrence at Port Angeles, sixty-five miles northwest on the Strait of Juan de Fuca and beyond Olympia to the south, and it is fair to assume that it must have been of very marked extent.

During this winter season there has also been an unusual flight of Raptores. About the middle of November, Snowy Owls (*Nyctea nyctea*) began to appear in numbers, the first flight of any importance since 1896: the local taxidermists up to February 1 having received upwards of fifty specimens, most of which present the usual form of plumage. The species has also been quite generally observed throughout the Sound region. There have also been brought to the local taxidermists a very large number of Great Horned Owls, and on looking over the mounted specimens, I found that the larger proportion were typical *saturatus*, among them some very dark and beautiful birds. There were also certain specimens apparently assignable to *occidentalis* and *lagophonus*, and one particular specimen which was very light and quite suggestive of *wapacuthu*. Numerous reports have also been received of individual birds being seen in various localities, and the flight of this species seems to have been widely extended throughout this region. Goshawks likewise have appeared in more than the usual numbers and with hardly an exception those examined were representative of *striatulus*. Mr. D. E. Brown of this city has two adults in fine plumage taken January 7 and 18.—S. F. RATHBUN, *Seattle, Wash.*

Migrant Shrike (*Lanius ludovicianus migrans*) at Newburyport, Mass.—On August 28, 1915, a short distance outside the city limits I noted a Migrant Shrike, my first acquaintance with the rather uncommon species. And again on August 21, 1916, in the same region a single bird of this species was noted.—S. W. BAILEY, *Pittsfield, Mass.*

The Cape May and Other Rare Warblers at Hatley, Stanstead County, Quebec.—The fall of 1916 will ever remain a memorable one from the fact of my having added the rare Cape May Warbler (*Dendroica tigrina*) to my list, as well as the Nashville (*Vermivora rubricapilla rubricapilla*) and Water-Thrush (*Seiurus noveboracensis noveboracensis*) two examples of the first, and one each of the two latter having been obtained. Of the Cape May five were seen between August 28 and September 12, one only of the Nashville on August 16, and one of the Water-Thrush on August 26. In addition to these a fine male Wilson's Warbler (*Wilsonia pusilla pusilla*) was obtained on August 24, the second only that I have seen here so far. Two Northern Parulas (*Compsothlypis americana usneæ*) were observed on August 13, and between August 23 and September 22, nineteen examples of the Bay-breasted (*Dendroica castanea*) were noted, as well as eleven of the Blackburnian (*Dendroica fusca*) between August 11 and September 9, and twenty of the Canada (*Wilsonia canadensis*) between August 11 and September 17. Two examples of the Yellow Palm (*Dendroica palmarum hypochrysea*) were seen on May 6, and another interesting item was the finding of the Black-throated Blue (*Dendroica caerulescens caerulescens*) breeding for the first time in June and July.—H. MOUSLEY, *Hatley, Que.*

Breeding of the Canada Warbler in Northern New Jersey.—On June 12, 1915, Dr. Wm. H. Wiegmann and the writer observed an adult male Canada Warbler (*Wilsonia canadensis*) at Budd's Lake, New Jersey. This date is more than a week later than transients of this species are ordinarily met with. Furthermore, the low woods near the lake are characterized by a number of northern plants such as the Bunchberry, Gold-thread, Dwarf Birch, Larch and many others. There was reason to believe, therefore, that the Canada Warbler might prove to be a summer resident in this locality.

Revisiting the Lake on July 4, 1916, I was gratified to find an adult female in the same spot and am practically certain that the male also was seen. On July 8, the female was observed busily engaged in searching for food, its action indicating that it had young nearby. On the following day I was so fortunate as to discover one of the young birds only a few days out of the nest, a fluffy, brownish fledgling with a tail not more than two-thirds or three-fourths grown. It was fed by the mother bird several times while I watched.

Budd's Lake is situated among the mountains of the western part of

Morris County, at an altitude of 933 feet above sea-level. The low, moist woods that the Warblers had chosen for their home consists chiefly of Red Maple, with an undergrowth of Sweet Pepperbush, Swamp Azalea, Arrow-wood, Black Alder, High Blueberry, Skunk Cabbage, Cinnamon and Royal Ferns, etc. The birds were always met near a road where the swamp was bordered by higher ground, about one-eighth of a mile from the Lake.

This is, so far as I know, the first recorded instance of the breeding of the Canada Warbler in New Jersey.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

Mockingbird at West Haven, Conn.—A Mockingbird (*Mimus polyglottos polyglottos*) appeared near the center of West Haven, Conn., on November 8, 1916, and has been observed almost every day up to January 22, 1917. It usually appears with a flock of Starlings. It pays no attention to food put out for the birds but prefers to eat the berries of the Bitter Sweet and Honeysuckle vines which grow along the fence. It does not appear to be wild as on two occasions I have walked under the apple tree in which it was perched.—N. E. WILMOT, *West Haven, Conn.*

Hudsonian Chickadees at Hatley, Stanstead County, Quebec.—On October 10, 1916, I came across two examples of the Hudsonian Chickadee (*Penthestes hudsonicus* subsp.?) in the same wood as the pair recorded in 'The Auk,' Vol. 33, 1916, p. 184; and they remained there until November 12. Between these dates I saw them on ten occasions, and generally they were in the company with a few *P. atricapillus* but it was quite an easy matter to locate them from the latter by their notes alone, without seeing them, and this I often did following up the sound until a view of the birds was obtained and identification confirmed.—H. MOUSLEY, *Hatley, Que.*

***Penthestes hudsonicus* at Portland, Maine.**—*Penthestes hudsonicus*, which did not come under the writer's observation at Portland during his collecting days, has twice made known to him its presence there since. On April 27, 1913, I watched a bird for three quarters of an hour as it moved about in trees and bushes at the west end of Portland,—alone most of the time but occasionally joined by a small party of Black-capped Chickadees (*P. atricapillus atricapillus*) which chanced to be in the neighborhood. Another bird passed much of the afternoon of October 27, 1913, near my house on Vaughan Street, Portland, and was identified only by its frequent call-notes. Since no specimens of *P. hudsonicus* are in existence from Portland or its vicinity, so far as I am aware, it seems best at present not to express an opinion as to the subspecies which was represented by these birds.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

"One of the Rarest Birds."—Under this caption Dr. Hartert (Novit. Zool., XXIII, Dec., 1916, 335-336, pl. 1) has recently given a brief history,

with a colored plate, of the supposed unique type of *Callaeops periophthalmica* Ogilvie-Grant, a bird purchased in Manila by the late John Whitehead, and now in the Tring Museum. Mr. Ogilvie-Grant compared the bird with *Arses*, but Whitehead thought it nearest to *Terpsiphone*, while Dr. Hartert affiliates it with *Xeocephus*. The latter ends his account with a reference to the literature of the species, omitting, however, two statements by McGregor which have much to do with the case. In the Philippine Journal of Science, II, A, No. 5, Oct., 1907, 340-342, pls. I-III, Mr. McGregor described *Terpsiphone nigra*, from Batan Island, north of Luzon, where he found it an abundant species. He called attention to its similarity to *Callaeops*, saying "It also agrees with the meagre description of *Callaeops periophthalmica* Grant; the latter, however, has no lengthened central rectrices and the type may be a young bird." In the 'Manual of Philippine Birds,' Part 2, p. 467, he says, "The short-tailed black males of this flycatcher agree with the description of *Callaeops periophthalmica*, but the identity of the two species has not been established." At the first place cited he mentions the fact that the type of *Callaeops* was shot "with a blow gun at Malabon, near Manila," a locality, he adds, "entirely unsuited to birds of this kind."

On comparing some topotypes of *Terpsiphone nigra* with the plate of *Callaeops*, I find Mr. McGregor had good reason to suspect the identity of the two supposed species. In color they are identical, except for slight differences in the under tail-coverts; the appearance of the fleshy eye-ring is the same, and there are no differences in size or proportions aside from the length of the middle tail feathers. The last may be explained on the ground that *T. nigra*, like some (possibly all) of the species of *Terpsiphone*, probably has a non-breeding plumage in which the males become short-tailed birds, as in *Diatropura* and some other groups. Oates (Fauna Brit. India, Birds, II, 1890, 46) says of *T. paradisi*, "the median tail-feathers grow to a great length, and are retained till May or June, when they are cast." Of *T. affinis*, he writes "the male after the moult of the second autumn acquires two long median tail-feathers, but probably sheds them at the end of the breeding-season." McGregor visited Batan Island at the end of May, when the birds were nesting, and the males collected by him are chiefly long-tailed ones. The date of capture of the type of *Callaeops* has not been recorded.

Terpsiphone nigra, in full long-tailed plumage, has the next to the middle pair of rectrices considerably lengthened, as noted in the original description. This character I do not find in *T. princeps* (sometimes called *atrocaudata*, but the description of *Muscipeta atrocaudata* Eyton applies better to 'Callaeops' than to *T. princeps*, and the type ought to be examined, if still extant) or *T. owstoni*, which appear to be its nearest relatives. These species, as well as a number of others examined in this connection all have fleshy rings round the eyes, and Hartert's remark that *Callaeops* "would thus only differ from all forms of *Tchitrea* [i. e., *Terpsiphone*] in having the ring or "wattle" of bare skin round the eyes" is quite misleading, as is also his reference to *Xeocephus* as its "real nearest relative."

As a result of the above comparison, I am convinced that the identity of the two alleged species is established beyond reasonable doubt, and that the bird is generically the same as *Terpsiphone*, at least that group containing *princeps*, *owstoni*, and doubtless *illex* (the last not seen by me). Finally, as Mr. McGregor described the adults, immature and young, the nest and egg, as well as the flight, song and native name of the bird, Dr. Hartert's remark that "the efforts of the industrious American ornithologists who have been working for years in the Philippine Islands should have brought it to light again ere this" has been fully met.—CHAS. W. RICHMOND, *Washington, D. C.*

Townsend's Solitaire (*M. townsendi*) at Seattle, Wash.—Although not rare in this immediate locality, Townsend's Solitaire is rather infrequently met with. This winter however, we have found it not at all uncommon, on one occasion five being seen feeding on the berries of the Madrona tree and associated with numbers of the Western Robin and Varied Thrushes.—S. F. RATHBUN, *Seattle, Wash.*

Winter Birds at Hatley, Stanstead County, Quebec.—The winter of 1916-17 is certainly proving an interesting one, for after an interval of three years Pine Grosbeaks (*Pinicola enucleator leucura*) have again visited the district. I first noticed them in my garden on December 16. Two females (out of which one was obtained) of the White-winged Crossbill (*Loxia leucoptera*) a species new to my list, were observed on the early date of August 31, and a flock of fifteen again on October 27. Redpolls (*Acanthis linaria linaria*) have been plentiful, first arriving on November 5, but Pine Siskins (*Spinus pinus*) and Evening Grosbeaks (*Hesperiphona vespertina vespertina*) have not put in an appearance as yet. Snow Buntings (*Plectrophenax nivalis nivalis*) arrived on November 14, and an example of the Sharp-shinned Hawk (*Accipiter velox*) was seen on December 19. Two Hudsonian Chickadees (*Parus hudsonicus* subsp.?) were seen on several occasions between October 10 and November 12, and on January 10 an example of the Northern Shrike (*Lanius borealis*) was obtained.—H. MOUSLEY, *Halley, Que.*

Unusual Late Autumn and Winter Records for Eastern Massachusetts.—On the 15th of November, 1916, Dr. W. M. Tyler and I discovered a Cape May Warbler (*Dendroica tigrina*) in the town of Belmont, Mass., and we found it again in the same place on the 19th and 25th of the same month. In this region, on the 9th of December, 1916, we saw a Palm Warbler (*Dendroica palmarum palmarum*). Mr. H. W. Wright had seen one of these birds (probably the same individual) in this neighborhood on the 9th of the previous month. On the 25th of February, 1917, Mr. Charles W. Jenks showed me a Fox Sparrow (*Passerella iliaca iliaca*) wintering in Bedford, Mass., where it had been under observation since the 6th of January.—WALTER FAXON, *Lexington, Mass.*

Rare Winter Visitants in the Vicinity of Plainfield, New Jersey.—

The past winter has been the most interesting, ornithologically, in the writer's local field experience of more than twenty years. The following five rare winter visitants are the most noteworthy species observed.

EVENING GROSBEEK (*Hesperiphona vespertina vespertina*). A pair of Evening Grosbeaks were observed in a grove of cedars on December 17, 1916, and the female was still present on December 25. This cedar grove is in the Washington Valley near Scotch Plains, and is the spot in which Evening Grosbeaks were found in January and February, 1911, my only other record of this species (see Bird-Lore, Vol. XIII, 1911, p. 95). It may be well to record that a male was collected on February 12, and a female on February 19, 1911. As on former occasions the Grosbeaks were feeding on the drupes of the Flowering Dogwood, particularly on the kernel, but probably to some extent on the pulp also.

PINE GROSBEEK (*Pinicola enucleator leucura*). In the same cedar grove a female Pine Grosbeak was seen on December 31, 1916, and on January 28, 1917, two females were present. On February 11 only a single female could be found. On all three occasions they were eating the Red Cedar berries in company with Purple Finches. My only previous records of this species were made in the winter of 1903-4. A number of specimens were collected on January 4, 1904.

RED CROSSBILL (*Loxia curvirostra minor*). No White-winged Crossbills have been observed during the winter to date of writing (February 16) and Red Crossbills have been noted but twice, a single bird on December 10, and another on December 24, 1916. Both were flying over, the characteristic "kip kip" serving to identify them. It is probable that there would have been more Crossbills in this region but for the local scarcity of spruce and pine cones this season.

REDPOLL (*Acanthis linaria linaria*). Redpolls have been more abundant than ever before in my experience. They were observed on numerous occasions from late November to February 11. The largest number was recorded on December 25 when about 120 were counted. The seeds of the White Birch constitute their chief food. An adult male collected on January 1 agrees with *A. l. linaria* in size, but is decidedly less brown above than typical specimens of that form. It is now in the collection of Dr. Jonathan Dwight.

LABRADOR CHICKADEE (*Penthestes hudsonicus nigricans* Townsend). On December 17, 1916, a couple of Labrador Brown-cap Chickadees were discovered in the same cedar grove, in which the Pine and Evening Grosbeaks were found. One was seen in the same spot on December 25, and on the 31st both birds were again met with. On the latter date one bird, a female, was collected. This specimen has been identified by Dr. Charles W. Townsend as belonging to his recently described Labrador race. Later dates for the remaining individual are January 14 and 28. On January 7, a single bird of this species was seen on the north side of the Third Watchung Mountain between Plainfield and Stirling. Judging by its dark cap it also

was *P. h. nigricans*. On February 4 in company with Mr. C. H. Rogers, another individual was met on the First Mountain between Westfield and Summit.

In every case the Labrador Chickadee was associated with larger numbers of the Black-cap Chickadee. The bird seen on January 7 was accompanied by three Tufted Titmice also. No form of *Penthestes hudsonicus* has ever before been recorded from New Jersey.—W. DEW. MILLER, Plainfield, N. J.

Notes from Madison, Wisconsin.—RED-THROATED LOON (*Gavia stellata*). On June 7, 1916, a loon was seen on Lake Mendota that at once attracted attention by its small size. The bird was not more than one hundred yards from shore and by a cautious approach I was able to study it carefully. Although in winter plumage, the character of the bill left no doubt but that it was of this species.

RED-BELLIED WOODPECKER (*Centurus carolinus*). A male was seen at frequent intervals in the immediate vicinity of my home from January 3 to May 20, 1916. Possibly the same bird was again noted from October 4 to October 8. Not noted during the summer months.

WESTERN MEADOWLARK (*Sturnella neglecta*). On April 13, 1916, a Western Meadowlark alighted on a fence a short distance away and sang for several minutes. The writer at one time spent several months in western Texas and adjoining regions where the thoroughly characteristic song of this species could be heard almost daily. The following quotation with the exception of (this) is taken verbatim from Kumlein and Hollister — 'Birds of Wisconsin.' "It is found regularly in Rock, Jefferson and Dane (this) counties, but only (?) in very late fall, November and even December, but not having as yet been noted in spring." It is probable that most observers will consider it uncommon at any season.

HARRIS'S SPARROW (*Zonotrichia querula*). One seen on May 11, 1916. — A. W. SHORGER, Madison, Wisc.

Notes from North Carolina.—The writers spent from December 30, 1916, to January 1, 1917, on and around Monkey Island, Currituck Sound, North Carolina, studying the winter bird-life of the region. Three observations are worthy of record.

REDPOLL (*Acanthis linaria* subsp.). Two observed on December 31, 1916, feeding on the beach opposite Monkey Island, in company with Ipswich and Savannah Sparrows. They were so tame as to permit an approach within ten feet. One was heard in the same place the next day. Mr. T. Gilbert Pearson informs us this is the second record for the State. As we had no means of collecting a specimen, it is impossible to state definitely to which subspecies the birds belonged. They were noticeably smaller than the Sparrows with which they were associated, and the presumptive evidence is of course strongly in favor of their being straight *linaria*.

ORANGE-CROWNED WARBLER (*Vermivora celata celata*). A single bird was very satisfactorily observed December 31, on Monkey Island in a grove of live oaks, by Johnson and Griscom. Readers of 'The Auk' may recall that Nichols and Griscom collected a specimen in the same locality January 3, 1915. Although this is only the fourth record for the State, the conditions on these outer islands are so similar to those obtaining farther south where the species is known to be a regular winter resident, that we should not be surprised to find it of regular occurrence in North Carolina. (See Wright, H. W., Auk, January, 1917.) It should be borne in mind that no other eastern warbler known to us is so inconspicuous and so easily overlooked.

BLUE-GRAY GNATCATCHER (*Polioptila caerulea caerulea*). A single bird of this species was seen on Monkey Island on December 30, and heard December 31, entirely normal and active. Mr. Pearson kindly informs us that this is the first winter record for the State. As with the Orange-crowned Warbler, however, we should not be surprised to have it recorded more frequently in winter along the coast should the number of competent observers increase. Barring a specimen observed by Mr. Horace W. Wright in Boston on December 3, 1910, which may be regarded as purely casual, this is the most northern winter record known to the writers.—J. M. JOHNSON, J. T. NICHOLS and LUDLOW GRISCOM, *New York City*.

Acknowledgment.—In our description of a new subspecies of the Western Meadowlark, *S. n. confluenta*, which appeared in the January, 1917, number of 'The Auk', we inadvertently omitted to make acknowledgment to Mr. D. E. Brown of Seattle, for the loan by him of certain specimens that were used in connection with the preparation of the paper, and we, therefore, herewith wish to express to him our sincere thanks for his courtesy in this respect.—S. F. RATHBUN, *Seattle, Wash.*

RECENT LITERATURE.

The Allen Bibliography.¹—A most welcome addition to bibliographic literature is the catalogue of the published scientific writings of Dr. J. A. Allen. We feel sure that all readers of 'The Auk' will heartily endorse the foreword by Prof. Henry Fairfield Osborn in which he states that the life and writings of Dr. Allen "have exerted so great an influence on the progress of ornithology and mammalogy in America that all who have the interest of these branches of science at heart, both in this country and abroad, will welcome this biographical and bibliographical volume." "It is issued" he adds "as an expression of the appreciation of Doctor Allen's life work by the Trustees of The American Museum of Natural History and his devoted colleagues on its Scientific Staff".

The total number of titles amounts to 1453, of which 966 relate to birds, the other topics covered being mammals, reptiles, zoögeography, nomenclature, and biography. Of mammals he has described no less than 573 new forms and 21 new genera and subgenera, while of birds he has named 49 new forms and 4 new genera. These figures alone will give some idea of the tremendous amount of work that Dr. Allen has accomplished and a perusal of the titles themselves will further emphasize the breadth of his knowledge and the part that he has played in developing his favorite branches of science.

By far the most interesting portion of the volume, however, is the delightful autobiographical sketch which precedes the bibliography. Others can express their appreciation of a man's life work and set forth its value to the world, but no one can describe the conditions under which it developed or the factors that contributed to its growth, so well as the man himself. We are therefore, under obligations to Dr. Allen for this sketch which is most interesting reading and rich in historical detail, much of which probably no one but Dr. Allen could furnish at this late day.

To quote again from Prof. Osborn's foreword: "we are sure that naturalists in all parts of the world will unite in felicitating Dr. Allen on the great work which he has accomplished and in wishing him many more years of strength and activity".—W. S.

Thorburn's 'British Birds'.²—With the third and fourth volumes of Mr. Thorburn's splendid work before us, another of the many books

¹ Autobiographical Notes and a Bibliography of the Scientific Publications of Joel Asaph Allen. Published by the American Museum of Natural History, New York. 1916. 8vo. pp. 1-215, frontispiece portrait.

² British Birds | written and illustrated by | A. Thorburn, F. Z. S. | With eighty plates in colour, showing over four hundred species. | In four volumes | Vol. III | Longmans, Green and Co. | 39 Paternoster Row, London | Fourth Avenue & 30th Street, New York | Bombay, Calcutta, and Madras | 1916. | All rights reserved. | Large 4to. pp. 1-87, pll. 41-60. Vol. IV. 1916. pp. 1-107, pll. 61-80. [Price \$10. per volume, net.]

dealing with the birds of Great Britain is brought to completion. The bird life of any country appeals to such a large number of people, that there will doubtless always be a demand for bird books which present the subject in an attractive manner. There have appeared during the last century and a quarter, the 'British Birds' of Bewick, Yarrell, Selby, MacGillivray, Gould, Lilford and others of lesser prominence, and some of these have gone through many editions, edited and amplified by ornithologists quite as notable as the original authors.

Each author has approached the subject in his own manner. Some, like MacGillivray, have made the text their main interest, and there is little doubt but that Dr. Coues, who was a great admirer of MacGillivray, got from his writings the idea of his famous 'Key'. Others who like our own Audubon were artists first and authors of necessity, have been mainly interested in the plates and some of them indeed did not write the text of their works at all.

Mr. Thorburn belongs to this latter, artist, class and as we explained in reviewing the earlier volumes of his work ¹ he originally intended that it should be simply "a sketch-book of British Birds" but was induced later to write a short account of each species which is admittedly largely a compilation. It is from the standpoint of the plates, therefore, that his work is to be judged and we think that on this basis it stands ahead of anything of the kind that has been produced. Bewick and Yarrell were noted for the beauty of their woodcuts, those of the former being executed by himself, those of the latter by Thompson. In comparing the two a reviewer in the 'Report of the British Association' for 1844 states that the beauty of the latter is "much enhanced by the improvements in the preparation of paper and ink and in the mode of taking off the impressions," and adds that were Bewick's blocks "intrusted to one of our first rate London printers an edition could be now produced, far superior to any which was issued in the lifetime of the author." This fact must be borne in mind when considering the relative merits of colored plates and we think that Mr. Thorburn has been most fortunate in his engravers. The softness of the plates and the delicate gradation of the colors we have not seen excelled in any ornithological work, and one has to look close to be convinced that they are really produced by the 'half-tone' process. While it would be interesting to see the paintings of some of the other British artists reproduced with the same excellence, we do not think that Mr. Thorburn would have any difficulty in holding the foremost position. He and Mr. Fuertes stand apart from all others except Audubon in the thoroughness of their knowledge of the activities and postures of the birds which they represent. Many an artist can paint what has been aptly termed a "map" of a bird, accurate in proportions, colors etc., but it is quite another thing to give to each bird that individuality of pose or action which characterizes its species, and this is what Thorburn and Fuertes have done.

¹ 'The Auk,' January, 1916, p. 84.

The two volumes before us cover the water birds (except the Steganopodes and one plate of Herons, which appeared in Vol. 2), the Gallinaceous Birds and Pigeons. The Ducks, Pheasants and Grouse give the artist his best opportunities and he has prepared some superb plates. As in all such works the pleasure which we derive from the beautiful pictures is mingled with regret that it is not possible to give each species a plate to itself instead of having to crowd so many together. This is, of course, not the artist's fault and as we said in connection with the earlier volumes he has displayed wonderful ability in grouping his subjects, so that each plate appears as a single finished painting, while each figure is displayed to the best possible advantage.

All in all we think that Mr. Thorburn's work will take its place as the best series of colored illustrations of British birds that has yet appeared, and is a work that should be in all reference libraries. It will appeal moreover to many lovers of the beautiful in art and in illustration, to whom birds are of only secondary interest.—W. S.

Evans' 'Birds of Britain.'¹—“This little work” we are told in the preface “though primarily intended for schools, may be found useful by those who require a short hand-book which includes the results of the most recent observations.” With such a plan and with an author of Mr. Evans' reputation and ability we are led to expect an authoritative and thoroughly up-to-date treatise. This expectation has apparently been realized in the main text, but a perusal of the introductory chapter covering the more general principles of ornithology, is decidedly disappointing.

In his treatment of migration the author has nothing to say of the work of the late W. W. Cooke, while he seems to be quite ignorant of the experiments of Dr. J. B. Watson, with terns on the Dry Tortugas islands, which have probably thrown more light on the subject of migration than any other recent investigation. The time-honored causes of migration—changes of temperature and abundance of food supply—are cited, but no mention is made of periodic physiological activities; while the statement that “Hardy birds such as Penguins . . . need hardly migrate at all,” does not accord with the accounts of the recent Antarctic expeditions, in which regular migrations covering hundreds of miles, from the pack ice to the nesting grounds, are described.

The half-tone illustrations are of varying merit and unfortunately we are not told which are photographs from nature and which from mounted specimens. In some the figures are so minute as to be of little value and this obscurity has led to the printing of the cut of the Spotted Flycatcher upside down.

The book will, however, prove of much value in spreading a knowledge of the British avifauna, which after all is its chief object.—W. S.

¹ The Birds of Britain, their Distribution and Habits. By A. H. Evans. Cambridge, 1916. Small 8vo., pp. 1-275, numerous text figures. \$1.25. (G. P. Putnam's Sons.)

Todd on New Birds from Colombia and Bolivia.¹— 'The Auk' has on several occasions felt compelled to take exception to the wholly inadequate diagnoses which some authors issue as the basis for new names. From the letters received from many prominent ornithologists we are assured that our stand is endorsed by the great majority of those who have the advancement of ornithology at heart. We regret exceedingly to have to revert to the matter again, but in a recent paper by Mr. Todd, we find new names proposed without adequate descriptions some of which have already proved stumbling blocks to others, working in the same field, the progress of ornithology being thus hindered instead of advanced.

These diagnoses are styled "preliminary," but both author and publishers know that a name must stand upon the original description, that is the one to which our reference leads us, and in the majority of cases we do not know whether supplementary diagnoses have appeared or not, and even if they have we are compelled in involved cases to rely upon the original diagnosis alone, additional information given subsequently may refer to the original species or it may not.

Why — and we ask in all seriousness — cannot all who are engaged in systematic work realize, as most of them do, that they are under a serious obligation to their fellow workers in making their descriptions as clear and definite as they possibly can, supplying measurements and comparisons with all related forms, so as to make the consultation of types a last resort instead of, as it often is, the only method of determining what a writer is naming?

It is we think high time that all ornithologists realize the seriousness of the work in which they are engaged or they will become the laughing stock of other systematists. In the volume of the 'Proceedings of the Biological Society of Washington' in which this paper appears there are new species of mammals, birds, reptiles, ophiurans, fossil insects, mollusks, etc. all well described. Why cannot the journal insist upon the same standard for all the diagnoses which appear on its pages? Some time ago there was a general agreement among American scientific publications that they would publish no new genera unless types were designated by the authors. If a similar stand were taken with regard to new species by refusing to publish "preliminary" or inadequate diagnoses systematic ornithology would be greatly benefited. If neither authors nor editors will realize the seriousness of this matter there will ere long be a call to revise the Code of Nomenclature so that the citation of a type specimen will not save a wholly inadequate description from the unidentifiable category.

The new names proposed by Mr. Todd in this paper are as follows: From Bolivar, Colombia: *Phænicothraupis rubiginosus* (p. 3) Turbaco; *Myiobius modestus suffusus* (p. 4) Turbaco; *Attila caniceps* (p. 4) Jaraquiel; *Xiphocolaptes procerus rostratus* (p. 5) Jaraquiel; *Phœochroa cuvierii* notia

¹ Preliminary Diagnoses of Apparently New Birds from Colombia and Bolivia. By W. E. Clyde Todd. Proc. Biol. Soc. of Washington, Vol. 30, pp. 3-6. January 22, 1917.

(p. 5) Turbaco; *Celeus innotatus* (p. 5) Jaraquiel; *Bubo virginianus elutus* (p. 6) Lórica; *Pyrrhura subandina* (p. 6) Jaraquiel; *Eupsychortyx decoratus* (p. 6) Calamar; from Santa Marta, Colombia: *Ostinops decumanus melanterus* (p. 3) Las Vegas; *Icterus mesomelas carrikeri* (p. 4) Fundación; *Eupsychortyx cristatus littoralis* (p. 6) Mamotoco; from Bolivia: *Ostinops sincipitalis australis* (p. 3) Buenavista; *Attila neoxenus* (p. 4) Río Yapacani; *Microrhopias melanogastris iliaca* (p. 5) Río Pilcomayo; *Xiphocolaptes obsoletus* (p. 5) Río Yapacani. *X. major obscurus* is also proposed (p. 6) as a substitute for *X. m. saturatus* Cherrie preoccupied.—W. S.

Grinnell on the Evening Grosbeak.¹—Just at the time when the eastern race of this erratic bird is attracting attention through the New England and Middle States, by a southward migration of unprecedented extent, Dr. Grinnell gives us the results of a prolonged study of the relationship of the western birds which he considers are divisible into four geographic races instead of two, as given in Ridgway's 'Birds of North and Middle America.' No matter how many races we may decide to recognize we must agree with Dr. Grinnell's contention that the type of *Hesperiphona vespertina montana* was definitely fixed on the plate which accompanies the original description in 'The History of North American Birds,' and that this name belongs to the Mexican bird; Chapman's *H. v. mexicana* becoming a pure synonym. Furthermore Dr. Grinnell finds that birds from the mountains of extreme southern Arizona agree with the Mexican race rather than with that of the Rocky Mountains, which brings this southern form into the limits of the A. O. U. Check-List.

The birds from farther north—representing '*montana*' of the Check-List—he divides into three races: *H. v. brooksi* (p. 20), from British Columbia, type locality, Okanagan; *H. v. californica* (p. 20), from the Sierra Nevada of California north into Oregon, type locality, Crane Flat, Mariposa Co., Cal., and *H. v. warreni* (p. 210), southern Rocky Mountains from Colorado to northern Arizona, type locality, Colorado Springs.—W. S.

Brooks' 'Game Birds of West Virginia.'²—Nearly half of the fourth 'Biennial Report of the Forest, Game and Fish Warden of West Virginia' is devoted to an account of the game birds by Mr. E. A. Brooks, consulting ornithologist to the warden. The eight chapters of this excellent report cover the subjects of forest conditions as related to game birds; hunting game birds; economic value of game birds; propagation; protection; and description of the game birds of the State.

¹The Subspecies of *Hesperiphona vespertina*. By Joseph Grinnell. The Condor, Vol. XIX, January, 1917, pp. 17-22.

²The Game Birds of West Virginia. By Earle A. Brooks. Fourth Biennial Report of the Forest, Game, and Fish Warden of West Virginia. 1915-1916. July 1, 1916. pp. 93-160.

The list of game birds contains not only descriptions and other information of value to the general reader and sportsman, but a discussion of the distribution of each species in the State including a large number of original records. The report forms another valuable addition to the literature of West Virginian ornithology and a work that can be consulted with profit by anyone interested in the history of American game birds, either from the point of view of the sportsman or the naturalist. A number of interesting photographs illustrate Mr. Brooks' paper the most noteworthy from an ornithological standpoint being a set of four eggs of the Duck Hawk on a ledge on the Great Cacapon River and a nest with three eggs of the Mourning Dove.—W. S.

Forbush's recent Bulletins on Economic Biology.—The Massachusetts State Board of Agriculture has recently issued a valuable Bulletin on 'The Natural Enemies of Birds,'¹ by Edward Howe Forbush, State Ornithologist. The balance of nature, a matter that is too often ignored in the present day enthusiasm for bird protection, is first considered, and then follows a detailed discussion of the several classes of bird enemies; mammals — domestic and wild; birds and reptiles.

Mr. Forbush rightly divides bird enemies into two groups "(1) Those introduced from foreign countries and which therefore tend to disturb the balance of nature, and should be eliminated so far as possible except when under control, either in domestication or in captivity. Such are the dog, house rat, ferret, cat, hog, ox, horse, sheep and goat, English Sparrow and Starling. (2) The native natural enemies, which have through thousands of years become perfectly adjusted in their relation to the species on which they prey. These should not be eliminated, with the exception of those few that threaten our lives or our material welfare, but should be conserved and controlled according to our needs. When a species becomes too numerous it should be reduced in numbers, if too few it should be allowed to increase."

The ninth annual report of the State Ornithologist² presents much matter of interest to those who are trying to interest the public in methods of practical bird protection, while another edition of Mr. Forbush's admirable Bulletin on 'The Domestic Cat'³ testifies to the demand for this publication and the awakening of the public mind to a serious consideration of the cat question. Arrangements have been made to supply this Bulletin to Audubon societies which may desire it for distribution.—W. S.

¹ The Natural Enemies of Birds. By Edward Howe Forbush. Economic Biology — Bulletin No. 3. Mass. State Board of Agriculture. 1916. pp. 1-58.

² Ninth Annual Report of the State Ornithologist, Mass. State Board of Agriculture, for the year 1916. By Edward Howe Forbush. December 6, 1916. pp. 1-26.

³ cf. Auk, 1916, p. 339.

A Bibliography of British Ornithology.¹— Three more parts of this work which was first noticed in 'The Auk' 1916, p. 443, have since appeared carrying it well through the letter 'R'. Among the most interesting of the biographical sketches are those of Latham, MacGillivray, and Pennant. The first we learn was a strict disciple of the Linnæan School, and strongly prejudiced against the growing innovations upon his master's nomenclature, which were even then being made on the Continent. Latham's plan to describe all known birds, while thoroughly commendable, was too great for his talents, especially when we consider the vast number of new birds quite unknown to Linnaeus which were at this time pouring into the museums of Europe. Of MacGillivray, whose collaboration with Audubon brings him into close connection with American ornithology, it is sad to learn that no detailed biography has ever been written and that the materials for such do not now exist. Pennant a descendant of a distinguished Welsh family united more than an average ability as a naturalist with the reputation of an elegant scholar and refined gentleman.

In glancing over the long list of the contributors to British ornithology one is struck by the very small number of titles from the pens of many of the foremost bird students that England has produced — such as Godman, G. R. Gray, Gould, etc. These men labored almost entirely in wider fields, leaving the British avifauna to others who preferred to concentrate their attention on the home birds, and who in consequence are for the most part but little known to the world at large.

The excellent typography of the first part of the work is fully maintained and when finally bound up it will form a handsome volume as well as a storehouse of information.— W. S.

Cory on New South American Birds.²— In a recent publication Mr. Cory describes three new subspecies of South American birds from the collections of the Field Museum of Natural History, as follows: *Nyctipolus hirundinaceus cearæ* (p. 4) Quixada, Ceara, Brazil; *Scardafella squammata cearæ* (p. 6), same locality and *Leptotila ochroptera approximans* (p. 7) Serra Baturite, Ceara, Brazil. There is also discussion on the races of *Nyctipolus hirundinaceus* and on the southern forms of *Speotyto cunicularia* and some further remarks on the author's *Piaya cayana venezuelensis*.— W. S.

Oberholser on the Birds of Bawean Island.³— In this paper Mr. Oberholser describes a collection made by Dr. W. L. Abbott on Bawean Island, in the Java Sea about 175 miles south of Borneo. The collection

¹ A Bibliography of British Ornithology from the Earliest times to the End of 1912. By W. H. Mullins and H. Kirke Swann. MacMillan and Co. 1916. 8vo. Pts. II-IV, each 6/net.

² Notes on Little Known Species of South American Birds with Descriptions of New Subspecies. By Charles B. Cory. Field Museum of Nat. Hist. Publ. 193. Zoölogical Series, Vol. XII, No. 1. January 25, 1917. pp. 3-7.

³ The Birds of Bawean Island, Java Sea. By Harry C. Oberholser. Proc. U. S. Nat. Mus., Vol. 52, pp. 183-198. February 8, 1917.

which was made in 1907, comprises fifteen species, eight of which had not been previously known from the island, and which bring the total number of its bird fauna up to 26.

Seven of the forms represented in Dr. Abbott's collection prove to belong to undescribed races which are here named and diagnosed by Mr. Oberholser as follows: *Spilornis bassus baweanus* (p. 185); *Sauropatis chloris cyanescens* (p. 189); *Strix baweana* (p. 190); *Microtarsus atriceps abbotti* (p. 193); *Malacocincla abbotti baweana* (p. 194); *Gracula javensis baweana* (195); and *Antheptes malacensis baweanus* (p. 196).

In a footnote Mr. Oberholser discusses the question of family names and argues that the name Bubonidæ should not be changed to Strigidæ simply because the name *Strix* (of earlier date than *Bubo*) is found to be applicable to the genus formerly known as *Syrnium*, and hence takes its place in the family Bubonidæ. In other words a family should take its name, not from the oldest generic name in the family but from the genus upon which the family was originally founded. It follows that the family name need only be changed when the name of the "type genus" is changed. This seems to be a sound argument and if followed will avoid some very undesirable and misleading changes.—W. S.

Wetmore on Secondary Sexual Characters in the Ruddy Duck.¹—

In dissecting some Ruddy Ducks Mr. Wetmore was able to verify the statement, first made by Macgillivray, that in this species the *bulla ossea* usually present in the trachea of the males of river and sea ducks, was entirely absent. Carrying his investigations further he discovered a remarkable tracheal air-sac which is used when the males are displaying during the mating season. The presence of this sac is responsible for the full and loose condition of the skin of the neck in this species, which renders it possible to slip the head through it when skinning a specimen, something which is quite impossible in our other ducks. Upon examining skins of other members of the subfamily Erismaturinæ he found the same condition of the neck skin in other species of *Erismatura* as well as in *Thalassornis* and *Nomonyx*.

Mr. Wetmore's studies are particularly welcome as we are badly in need of more knowledge of the anatomy of birds in arriving at a true understanding of their systematic relationships. The field is a large one but for some reason or other has not been attractive to ornithologists. We hope that Mr. Wetmore may receive every encouragement to continue his investigations along these lines.—W. S.

Mathews' 'Birds of Australia.'²—The first part of volume six which is now before us begins the treatment of the Parrots, a group of birds

¹On Certain Secondary Sexual Characters in the Male Ruddy Duck, *Erismatura jamai-censis* (Gmelin). By Alexander Wetmore. Proc. U. S. Nat. Mus., Vol. 52, pp. 479-482. February 8, 1917.

²The Birds of Australia. By Gregory M. Mathews. Vol. VI, Part I. November 22, 1916.

abundantly represented on the Australian continent and closely associated with it in ornithological history. This number covers the Lories (Trichoglossoidæ), the Lorilets (Opopsittidæ), the Palm Cockatoos (Proboscigeridæ), and the Black Cockatoos (Kakatoïdæ — in part). The discussion of the nomenclature of both genera and species is as usual very full, and there is an historical résumé of the systematic literature of the entire group of Parrots.

Now that Mr. Mathews has reached families that are largely limited to the country of which he writes, or those in the same region, there are but few extra-limital forms discussed and fewer far-reaching changes in nomenclature. We note the following new names in this installment of the work: *Parvipsitta* subgen. nov. (p. 43), type *Psittacus pusillus* White; *Nannopsittacus* gen. nov. (p. 65), type *Cyclopsitta suavisissima* Selater; *Probosciger aterrimus oorti* subsp. nov. (p. 94), type locality, Dutch New Guinea. There is an elaborate discussion of the geographic races of the great black Palm Cockatoos and their proper nomenclature, which throws much light on a vexed question.—W. S.

Origin of the Generic Name *Æthia*.¹—Dr. E. Hartert has recently called attention to the fact that the name *Æthia* adopted in the last edition of the A. O. U. Check-List in place of *Simorhynchus*, should be cited from Merrem (Versuch eines Grundnisses zur Allgemeinen Geschichte und natürlichen Eintheilung der Vögel, Leipzig, 1788) instead of from Dumont (Dict. Sci. Nat., revised edition, I, 1816, Suppl., 71). This is a very welcome addition to our knowledge of the history of the name, but Dr. Hartert seems rather severe in his criticism of the A. O. U. Committee for not running the name back to its original source.

The writer is responsible for calling attention to the name (see Auk, 1907, p. 190) and so far as he is aware it had not been quoted by any ornithologist except Dumont, which would indicate that Merrem's work referred to by Dr. Hartert as "well known but somewhat scarce," is decidedly less well known than he seems to think. It is moreover not to be found in the libraries of either Philadelphia or Washington. Dr. Hartert asks: "Why was no search made for Merrem's name?" The writer would reply that a search was made. Sherborn's 'Index Animalium' was consulted and while the work cited by Dr. Hartert was found it is stated that it contains no new species and as the name *Æthia* is not listed by Sherborn, it was a natural inference that it did not occur in the work.

Curiously enough Dr. Hartert corroborates Sherborn by stating that the German work contains only vernacular names but adds that *Æthia* occurs on page 7 of a Latin edition which he quotes as 'Tentamen Naturalis Systematis Avium.' This work seems to be less known than the other, although what appears to be the same thing is quoted by Engelmann and

¹ On the Name of the "Auklets." By Ernst Hartert, Ph.D. Novitates Zoologicae. XXIII, No. 3, p. 339. December 1, 1916.

some old reviews as 'Primæ linæ ornithologiæ.' As Dr. Hartert has the advantage of having access to a copy of the work we should be glad to know which is the correct title of the Latin work; also why it is necessary to quote the name from the German edition; and why he quotes the date as 1788 instead of 1787 which is given by both Sherborn and Engelmann as the date of Volume I. It would benefit those interested in 'priority hunting' for which Dr. Hartert states that he has "no time," if he would also tell us what other new names, if any, the work contains thus supplying a valuable addition to Sherborn's list. It might be remarked that from the way in which Dr. Hartert gives the "correct quotation" for *Æthia*, it would appear that the Latin edition was part of the German one but if this were the case we cannot understand how Sherborn missed the name.

With Dr. Hartert's opinion that the adoption of the name from Dumont is quite impossible we cannot agree. The specific name *crisatella* had been applied to but one Auk-like bird, *Alca crisatella* Pallas, and the indication of this species as the type of *Æthia* is, we think, perfectly clear.—W. S.

Bird Enemies of a few Insect Pests.—The following statement about the bird enemies of grasshoppers is made in Farmers' Bulletin 747, prepared in the U. S. Bureau of Entomology: "The Bureau of Biological Survey has found that wild birds play a great part in the natural control of grasshoppers. These feathered friends of man are always present where grasshoppers abound and work almost constantly in aiding the farmer. The statement that all birds feed upon grasshoppers is so near the absolute truth that it needs only insignificant modifications. From the largest hawks to the tiny hummingbird there are no exceptions other than the strictly vegetarian doves and pigeons. Although birds of all families prey upon grasshoppers, the following may be selected as the most important destroyers of grasshoppers for their respective groups: Franklin's gull, bobwhite, prairie chicken, red-tailed, red-shouldered, broad-winged, and sparrow hawks, the screech and burrowing owls, yellow-billed cuckoo, road-runner, nighthawk, red-headed woodpecker, kingbird, horned lark, crow, magpie, red-winged and crow blackbirds, meadowlark, lark bunting, grasshopper and lark sparrows, butcher bird, wren, and robin."¹

It is not possible to present as good an account of the bird enemies of many other pests for birds are particularly fond of grasshoppers. Another injurious insect recently published upon by the Bureau has its bird enemies however, and the statement is made that:

"Among the important enemies of the fall army worm are our common wild birds. Some of these are the following: Crow blackbird or grackle, yellow-headed blackbird, chipping sparrow, bluebird, mockingbird, and meadowlark."²

¹ Walton, W. R., Grasshopper Control in relation to Cereal and Forage Crops. Farmers' Bull. 747, October, 1916, pp. 11-12.

² Walton, W. R. and Luginbill, P. The fall army worm or "grass worm," and its control. Farmers' Bull. 752, Nov., 1916, p. 12.

Birds are also given considerable credit as predators upon the common cabbage worm. The species which "are known to feed upon cabbage worms are the chipping sparrow, English Sparrow, and house wren. It is certain, however, that other species eat them, and in one case it was found that during the winter the number of pupæ of the cabbage butterflies was reduced more than 90 per cent by birds feeding upon them."¹

This is high praise for the birds and gives them commanding rank among predacious enemies of the cabbage worm. In the case of another injurious insect also, the velvet-bean caterpillar, it is said that the red-winged blackbird is the most important predatory enemy. Other birds feeding upon the pest are the mockingbird and field sparrow.²—W. L. M.

Annual Report of the National Association of Audubon Societies.—The Annual Report of the Audubon Societies³ is a revelation to those who labored in the cause of wild bird protection twenty or more years ago, before public sentiment was aroused, and we think it is safe to say that the present development of the movement is far beyond their most sanguine expectations.

While the reports of the Secretary and the various special agents, are exceedingly interesting reading and the long list of members and contributors, most encouraging, we think the most significant feature is the series of reports from local societies of which nearly 100 are listed. These show how widespread is the interest in bird protection and what a tremendous hold it has upon the people of the country.

Another point in the development of the work is the apparent passing of the State Audubon Society except where it is well endowed or else purely local in character. Independent local clubs, conducted in accordance with the needs of the local community and working in affiliation with the National Association, seem to be the more natural form of development. While the State Societies did excellent service at the start it is impossible now to meet the demands made upon them without independent endowment, and the local organizations seem to turn naturally to the National Association as the central or affiliating body. The number and size of the units engaged in the work however are simply matters of organization, the objects attained are the same in any case.

In the introduction to his report Secretary Pearson calls attention to a very significant feature in the development of bird protection; that is the growing tendency of sportsmen's organizations to take up the cause of the non-game birds. These societies were established originally for the protection of game birds for food and for recreational shooting, and this extension of their activities is a recognition of the broader principle of the

¹ Chittenden, F. H. The common cabbage worm. *Farmers' Bull.* 766, Nov., 1916, p. 9.

² Watson, J. R. Life-history of the velvet-bean caterpillar (*Anticarsia gemmatilis* Hübner), *Journ. Ec. Ent.* 9, No. 6, Dec., 1916, pp. 526-7.

³ Annual Report of the National Association of Audubon Societies, *Bird-Lore*, January, 1917.

protection of wild life for its economic value to our trees, flowers and crops — and necessarily to man himself.

This report should be read through by every one interested in wild bird life and every reader will we feel sure join with us in congratulating the National Association and its officers upon the completion of a most successful year's work.— W. S.

Lloyd-Jones on Feather Pigments.¹— This investigation while carried on primarily in connection with the study of color-inheritance in Pigeons, has an important bearing upon the general subject of coloration in birds. The author finds that there are only two pigments in domestic Pigeons, a red-brown, which produces the red and yellow colors, and a black, which under different conditions produces black, dun, blue and silver. In typical "red" birds the pigment granules are about 0.3 m. in diameter; in 'plum colored' individuals they are 2.0 m. or more, while in yellows they are so minute that their granular structure cannot be determined. Blue as in all birds is a structural color but just what physical peculiarities of the feather produce it has not yet been determined. An interesting point in the author's paper is that he finds that the black pigment may exist either in spheres or in rods so that genetically speaking we may have two different blacks which to the eye appear absolutely identical. Mr. Lloyd-Jones is to be congratulated upon a piece of careful work in a field which offers opportunities for many important investigations.— W. S.

Grinnell on Distributional Control.²— Dr. Grinnell's object in this interesting paper is to demonstrate that data secured through field observation can be so employed as to bring results essentially similar to, and just as conclusive as, those secured through laboratory experimentation, in determining the factors which govern the delimitation of animal habitats.

The cases of several species of bird and mammals are considered in detail and the possible effect of various environmental factors is carefully weighed.

Dr. Grinnell finds that in the majority of cases which he has studied, temperature looms up as the most frequent delimiting factor, but he argues that this fact is in no way antagonistic to the claim that other factors such as humidity, food-supply and shelter also figure critically. The paper is suggestive and gives one a deeper insight into the complications of a problem that we are perhaps too much inclined to regard as entirely solved.— W. S.

Recent Publications of the U. S. Biological Survey.— Three bulletins have recently been issued by the U. S. Biological Survey. One of

¹ A Microscopical and Chemical Study of Feather Pigments. By Orren Lloyd-Jones. Jour. Exper. Zool., Vol. 18, No. 3, April, 1915, pp. 453-495, pls. 1-7.

² Field Tests of Theories Concerning Distributional Control. By Joseph Grinnell. American Naturalist, LI, pp. 115-128, February, 1917.

these¹ consists of popular economic accounts of twenty-three of the most common birds of the southeastern states with especial emphasis on those species which destroy the cotton boll weevil. Another² tells how to attract birds in the northwestern states. It is a reprint of similar bulletins for other sections of the country with a different list of fruit trees and shrubs.

Still another³ deals with the care and breeding of Canaries and seems rather outside of the regular activities of the Department though if it tends to do away with the caging of native birds where this is still permitted by law it will serve a good purpose.—W. S.

The Ornithological Journals.

Bird-Lore. XVIII, No. 6. November–December, 1916.

Winter Bird Photography. By C. F. Stone.

Dick, the Sandhill Crane. By Florence M. Bailey.

Observations on Woodpeckers. By W. O. Doolittle.

A House Wren Record. By Hubert Prescott.—Tabulation of food.

A colored plate by Fuertes, illustrates several species of Wrens, while the Educational Leaflet treats of the Black-necked Stilt.

The Annual Report of the National Association of Audubon Societies, makes up the bulk of the number (see p. 231).

Bird-Lore. XIX, No. 1. January–February, 1917.

Birds in the War-Zone. By Major Allan Brooks.

A Condor's Quill. By F. M. Chapman.—Trapping the birds in the Andes.

An Effective Feeding Device. By J. C. Lee.

The colored plate illustrates the Thrashers and the Educational Leaflet covers the English Sparrow.

The usual Christmas Bird Census is issued in this number.

The Condor. XVIII, No. 6. November–December, 1916.

Some Results of a Winter's Observations in Arizona. By A. B. Howell.

Meeting Spring Half Way. By Florence M. Bailey.

Nesting of the Leconte Thrasher. By J. R. Pemberton.

The San Domingo Grebe in Bexar County, Texas. By R. W. Quillin and R. Holleman.

More Summer Birds for San Francisco County. By M. S. Ray.—Fifty-six species added to his previous list.

¹ Common Birds of the Southeastern United States in Relation to Agriculture. By F. E. L. Beal, W. L. McAtee, and E. R. Kalmbach. Farmers' Bulletin, 755. October 26, 1916.

² How to Attract Birds in the Northeastern United States. By W. L. McAtee. Farmers' Bulletin, 760. October 16, 1916.

³ Canaries: Their Care and Management. By Alexander Wetmore. Farmers' Bulletin 770. December, 1916.

The Condor. XIX, No. 1. January–February, 1917.

Further Notes on the White-throated Swifts of Slover Mountain. By W. C. Hanna.

Birds of the Humid Coast. By Florence M. Bailey.

The Townsend Solitaire. By F. S. Hanford.

Further Notes on the Birds of Forrester Island, Alaska. By George Willett.

The subspecies of *Hesperiphona vespertina*. By J. Grinnell. (see p. 225).

The Oölogist. XXXIII, No. 12. December 15, 1916.

Northern Ravens in Nova Scotia. By R. W. Tufts. Account of nesting.

Nesting Birds of Copan, Washington Co., Okla. By Albert J. Kern.— 77 species.

The Cactus Wren. By D. I. Shepardson. Habits etc. at Los Angeles, Cal.

Some Nesting Birds of the Judith Basin, Montana. By P. M. Sillo-way.— Nesting of the Magpie and Desert Horned Lark.

The Wilson Bulletin. XXVIII, No. 4. December, 1916.

The Mating and Nesting Habits of *Fregata aquila*. By Homer R. Dill.— On Laysan Island.

Birds by the Wayside — In Greece. By Althea R. Sherman.

The Albatross of Laysan. By Homer R. Dill.— Numerous illustrations from photographs.

The Cedar Waxwing (*Bombycilla cedrorum*) During July and August, 1916. By Katharine C. Post.— A valuable intensive study of the nest-building, nestlings and food habits of the species.

Blue-Bird. VIII, No. 10. IX, Nos. 1 and 2. November to January, 1917.

Miss Cordelia J. Stanwood has several interesting biographies; the Alder Flycatcher and Olive-backed Thrush in November issue; Redstart in December.

The Ibis. X Series, V, No. 1. January, 1917.

Notes on Birds Observed at Erzerum. By P. J. C. McGregor.

Notes on Birds observed in the North Sea and North Atlantic Ocean during the Autumn and Winter of 1914. By Lieut. J. N. Kennedy.

A little-known Bird Colony in the Gulf of Mexico. By Lieut. J. N. Kennedy.— Alacran Reefs, ninety miles north of Yucatan.

With the British Association in Australia. By A. H. Evans.— A delightful account of the trip describing the native birds as a visitor with limited time is able to see them. Mr. Evans actually made the acquaintance of nearly one third of the 395 species credited to Victoria, and has given us a most satisfactory picture of Australian bird-life.

On the Breeding of the South African Black Duck (*Anas sparsa*). By F. E. Blaauw.

Remarks on Some Recent Collections of Birds made by Mr. G. L. Bates in Camaroon. By W. R. Ogilvie-Grant.— Notes on a number of species and

descriptions of the following new forms: *Apalis jacksoni minor* (p. 76) Bitye, River Ja., *Apalis ansorgei* (p. 77) N'Dalla Tando, N. Angola; *Bradypterus grandis* (p. 78) Bitye, River Ja.

Dr. John C. Phillips has an interesting letter on the Steamer Duck embodying some of the observations on this species made by Mr. W. S. Brooks on his recent expedition to the Falkland Islands.

Bulletin of the British Ornithologists' Club. CCXX, January 2, 1917.

Rothschild and Hartert review the races of *Lalage karu* recognizing six forms of which *L. k. obscurior* (p. 16), Fergusson Isl.; *L. k. keyensis* (p. 17) Little Key Isl. and *L. k. pallescens* (p. 17) Sudest Isl., are described as new. Lord Rothschild further discusses Mr. Mathews' races of owls of the genus *Tyto*.

British Birds. X, No. 7. December, 1916.

British Birds Marking Scheme — Progress for 1916. By H. F. Witherby.

A summary shows that up to the beginning of 1916 48,950 birds had been banded, of which 1903 had been recovered.

Notes on the Breeding-Habits of Temminck's Stint. By Maud D. Haviland.— Illustrated from photographs.

British Birds. X, No. 8. January, 1917. Notes on the Breeding Habits of the Red-backed Shrike. By J. H. Owen.

Supposed Breeding of the Barnacle Goose in Iceland. By H. Noble.

Avicultural Magazine. VIII, No. 1. November, 1916.

Breeding of the Little Bustard. By W. H. St. Quintin.

Avicultural Magazine. VIII, No. I. December, 1916.

Notes on a few American Warblers. By Lady William Cecil.

South Australian Ornithologist. III, Part I. January, 1917.

Field Notes on *Acanthornis magnus* (Gld.) Scrub Tit. By E. Ashby.

Revue Française d'Ornithologie. VIII, No. 93. January, 1917.

Possible Utilization of the Kerguelen Islands as a National Park for the Conservation of Antarctic Animals. By A. Menegaux.

List of Birds Collected or Observed on the Ivory Coast (Guinea). By Drs. Bonet and Millet-Horsin.— Concluded.

Messenger Ornithologique. VII, No. 4, 1916. 9 (In Russian).

Subspecies and Natio. By P. P. Sushkin.— A plea for the adoption of quadrinomial names, the fourth term to indicate, as it were, a subspecies of a subspecies, since in many cases subspecies are not of equal value.

On the Birds of the Far East. By S. A. Buturlin.— *Cetrastes bonasia ussuriensis* (p. 222); *T. b. kolymensis* (p. 226); *T. b. amurensis* (p. 226); and *T. b. volgensis* (p. 227), subspp. nov.

Preliminary List of Birds Observed in Sochi District of the Black Sea Government. By Alex. Koudashev.

Observations on the Rare and Little-known Birds of the Government of Moscow. By A. M. Kaminsky.

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Pearson, T. Gilbert. How the Birds Get through the Winter. (The New Country Life, February, 1917.)

Stanwood, C. J. The House Beautiful. (The House Beautiful, February, 1917.) — Red-eyed Vireo's Nest.

Chapin, J. P. Migration of Birds in Africa. (American Museum Journal, December, 1916.) — A valuable paper, giving probably the first definite knowledge of migration among tropical African birds, with interesting data on the arrival of European species in the Autumn.

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"K. P. & E. W. V." Bird Lovers in Prospect Park. (Brooklyn Museum Quarterly. July, 1916.)

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Craig, W. Synchronism in the Rhythmic Activities of Animals. (Science, Dec. 1, 1916.) — Comment on paper in 'The Auk' by Prof. W. B. Barrows, April, 1913, p. 187.

Taverner, P. A. The Faunas of Canada. (Canada Year Book, 1915.) — A review of the Faunal areas of Canada with lists of the characteristic mammals and birds of each.

Wetmore, Alexander. A New Cuckoo from New Zealand. (Proc. Biol. Soc. Wash., Vol. 30, pp. 1-2, January 22, 1917.) — *Urodynamis tailensis pheletes*, Otago Province.

Oberholser, H. C. Description of a New *Sialia* from Mexico. (Proc. Biol. Soc. Wash., Vol. 30, pp. 27-28, February 21, 1917.) — *Sialia sialis episcopus*, Santa Engracia, Tamaulipas.

Baker, E. C. Stuart. The Game Birds of India, Burma and Ceylon (continued). (Jour. Bombay Nat. Hist. Soc., XXIV, No. 4, October 25, 1916.) — Colored plate of *Crossoptilon harmani*.

Whistler, Hugh. Notes on Some Birds of the Gujranwala District, Punjab. (Jour. Bombay Nat. Hist. Soc., XXIV, No. 4, October 25, 1916.)

Wait, W. E. Notes on Ceylon Rails, Waders, Gulls and Terns. (Spolia Zeylanica, X, Part 38, November, 1916.) — An instalment of a proposed 'Handbook' of Ceylon birds.

Publications Received. — **Allen, J. A.** Autobiographical Notes and a Bibliography of the Scientific Publications of Joel Asaph Allen. Pub-

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

lished by the Amer. Mus. of Nat. Hist., New York, 1916, pp. i-xi, 1-215. Frontispiece portrait.

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Oölogist, The, XXXIII, No. 12, and XXXIV, Nos. 1, 2, and 3, December, January, February, and March, 1917.

Ornithologische Monatsschifte, 1914, No. 12, 1915, Nos. 3 and 4.

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Records of the Australian Museum, Vol. XI, Nos. 5 and 6.

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Scottish Naturalist, The, Nos. 60 and 61, December, 1916 and January, 1917.

South Australian Ornithologist, The, III, Part 1, January, 1917.

Wilson, Bulletin, The, XXVIII, No. 4, December, 1916.

Zoologist, The, XX, Nos. 239 and 240, November and December, 1916.

CORRESPONDENCE.

Description of Audubon.

EDITOR OF 'THE AUK'

Dear Sir:—

Recently when examining a file of the 'Sentinel & Witness,' a weekly newspaper published in Middletown, Conn., now discontinued, I found in the issue for September 6, 1843, the following letter, copied from the 'Buffalo Courier.' I do not recall seeing elsewhere such a vivid description of Audubon.

"Messrs. Editors: Mr. Weed, in one of his recent letters from London, quoting Mr. Audubon, our great ornithologist and naturalist, as one of the American authors, says: "he is not sure that Mr. Audubon is an American." Should the remark catch the eye of the great 'trapper' nothing would give him more displeasure than to be even suspected of being an European. Mr. Audubon was born in New Orleans, is now sixty years of age and resides in New York City about nine miles up town. The writer had the pleasure of a personal interview with him at St. Louis, in April last, and learned these facts from his own lips.

"Mr. Audubon is a man about the middle statute; his hair is white with age, and somewhat thin; he combs it back from an ample forehead, his face being sharp at the chin; has grey whiskers, an aquiline nose, and a hazle eye, small, keen and indicative of great tranquility, and sweetness of temper, cheerfulness and genius. He is a man of robust constitution though not of a stout frame. He told me he had not taken a particle of medicine for twenty years. He is capable of any fatigue; can walk thirty-five miles a day with ease, for months; can sleep any-where in the open air; endure all climates; his principal food being soaked sea biscuit and molasses. He cannot well masticate meat on account of having lost his teeth, from which he suffers, and is obliged to boil his meat to rags.

"He wore a dark frock coat, velvet vest and blue hunting shirt; is very pleasing and agreeable in conversation, and makes one perfectly at ease in his presence. He says a man can live one hundred years with temperate habits, regularity, and attention to diet.

"He was about starting up the Missouri — said he was entirely done with ornithology; his object now being to classify the American quadrupeds. He was severe on Buffon, whose book he regarded of no authority; said Buffon was a man of wealth, resided in Paris, and wrote his descriptions from dried skins, and drew largely upon his fancy. Mr. Audubon anticipated a good deal of pleasure, and much hard trapping, shooting,

drawing and writing. He takes all his drafts from the animal as soon after it is taken as circumstances will admit."

The Secretary of the Buffalo Historical Society writes me that the letter above referred to was published in the 'Buffalo Courier,' August 22, 1843. No signature was attached.

Sincerely yours,

JNO. H. SAGE.

Portland, Conn., Feb. 12, 1917.

Concealing Coloration.

EDITOR OF 'THE AUK'

Dear Sir:—

In our book on Concealing Coloration the Schillings flashlit zebra photographs were included solely to show what kind of background zebras have at their drinking places.

Flash-light, illuminating so disproportionately the nearest objects (the zebras) could not, of course, illustrate these patterns' normal function. Our omission to state this beneath the pictures was an oversight.

To every owner of our book whom I can reach, I am now sending, gratis, for substitution for one of the Schillings pictures, a copy of the very remarkable zebra-concealment illustration that I published in the bulletin of The Am. Museum of Nat. History.

I beg every owner of our book, who lacks this picture, to ask me for one.

Respectfully,

ABBOTT H. THAYER.

Monadnock, N. H., March 6, 1917.

NOTES AND NEWS.

SAMUEL WRIGHT, an Associate of the American Ornithologists' Union since 1895, died at Yonkers, N. Y., on January 18, 1917. Mr. Wright was born June 25, 1875, at Conshohocken, Pa., where his entire life was spent until about a year ago when business interests compelled him to move temporarily to New York. He was the son of William Wright and Frances Cresson, and was educated at the Friends' boarding school at Westtown, Chester Co., Pa. After graduation he held one of the Jessup scholarships at the Academy of Natural Sciences of Philadelphia, where he rendered valuable service in the ornithological department and delighted in the

opportunity to devote himself to a study in which from early youth he had been deeply interested. He joined the Delaware Valley Ornithological Club soon after its organization and later became one of its active members and served as treasurer 1908-1911. In these years he formed a good local collection of birds and acquired an accurate knowledge of our native species and an experience in field observation which made him an ornithologist of no little ability.

Leaving the Academy in 1892 to enter business he became connected with the J. Ellwood Lee Chemical Company of Conshohocken of which he was assistant secretary for many years. In 1911 the Lee Tire and Rubber Company was organized and Mr. Wright became its secretary, a position which he held until he removed to New York in 1916, becoming associated with the Philadelphia Rubber Work Company and general manager and treasurer of the Acushnet Process Company. He was untiring in his devotion to business and his abilities contributed largely to the success of the interests with which he was connected. In spite of the continual pressure of business obligations he never lost his interest in birds and his greatest pleasure was to get out in the open, either in the vicinity of his home, where his early studies had been conducted, or on the tract that he had secured in the Adirondacks.

He was devoted to the American Ornithologists' Union and attended the annual meetings whenever possible. In company with Mrs. Wright he joined the 'overland' party which attended the San Francisco meeting in 1915, and with keen delight made the acquaintance in life of many of the western birds which he had previously known only as museum specimens.

Mr. Wright had a delightful personality; cheerful under any conditions and kindly disposed toward everyone with whom he came in contact.

He was married in 1910 to Miss Louise Weston who with two daughters survives him.—W. S.

MRS. KATHARINE REBECCA STYER, an Associate of the American Ornithologists' Union for fourteen years, died of pneumonia on January 20, 1917, at her residence in Concordville, Pa. She was born November 1, 1859, at Chester Heights, Pa., the daughter of Henry Lincoln Paschall and Anna Thompson Pancoast, and was married in 1880 to Mr. J. J. Styer. Soon after her marriage she took up the study of birds, and with no assistance but such as she could obtain from some of the older ornithological books, she acquired a remarkably thorough knowledge of the local avifauna and since 1902 has been one of the most reliable members of the Delaware Valley Ornithological Club's migration corps. She was also deeply interested in the work of the Pennsylvania Audubon Society and did much to encourage the study of ornithology among boys and girls of her acquaintance.

Mrs. Styer's interest in birds was far above that of the average bird lover, she was all that this term implies and a good ornithologist besides.—W. S.

THE Annual Meeting of the Delaware Valley Ornithological Club was held on January 4, 1917, at the Academy of Natural Sciences, Philadelphia. The election of officers for the present year resulted in the choice of Henry W. Fowler, president; George H. Stuart 3rd, vice-president; J. Fletcher Street, secretary; Dr. Samuel C. Palmer, treasurer and Dr. Spencer Trotter, editor of 'Cassinia.' The Club held fifteen meetings during 1916, which were well attended, as were the field trips conducted during the spring.

THOSE who have on so many occasions derived pleasure from the bird portraits that have appeared from the brush of Mr. Louis Agassiz Fuertes have now the additional pleasure of seeing what he has been able to do with the larger mammals of North America.

Fifty of his paintings have been reproduced in colors in the 'National Geographic Magazine' for November, 1916, with text by Mr. E. W. Nelson, chief of the U. S. Biological Survey. Mr. Fuertes' success with the mammals is quite as striking as with the birds and we are glad to learn that a series of the smaller species is to follow. The 'National Geographic Magazine' has again done a splendid piece of educational work in making this series of pictures available to the public at large.

WORK in ornithology will be offered again this coming summer at the University of Michigan summer biological station in northern Michigan, under the direction of Professor R. M. Strong. There will be a general course devoted to identification work, primarily, and research for properly qualified students. The station is located in wild country where a number of northern species breed. Further information may be obtained from Dr. George R. La Rue, University of Michigan, Ann Arbor, Michigan.

THE well known and old established natural history monthly, 'The Zoologist,' having been acquired by Messrs. Witherby & Co., will in future be incorporated with the illustrated monthly magazine, 'British Birds', published by the same firm at 326, High Holborn, London, England.

MESSRS. WITHERBY & Co., have been appointed European Agents for the "Journal of the Natural History Society of Siam." The work is illustrated with plates and figures, and deals with all branches of the Natural History of that Country.

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Check-List of North American Birds. Third edition, revised, 1910. Cloth, 8vo., pp. 426, and 2 maps. \$2.50, net, postage 25 cents. Second edition, revised, 1895. Cloth, 8vo, pp. xi + 372. \$1.15. Original edition 1886. Out of print.

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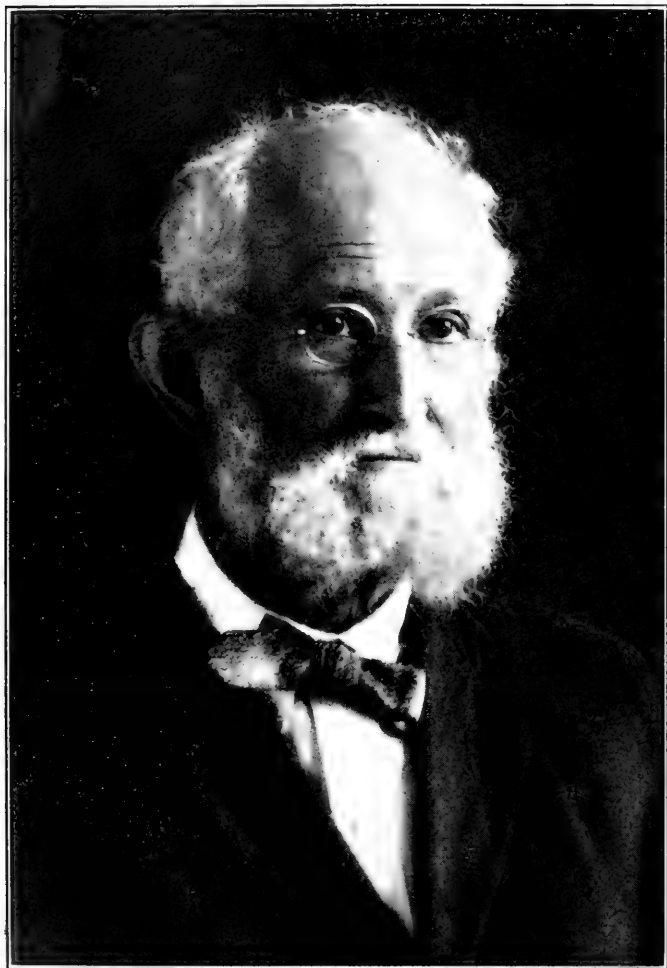
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F. E. L. Beal.

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LIFE AND WRITINGS OF PROFESSOR F. E. L. BEAL.¹

BY W. L. MCATEE.

Plate VI.

ON Saturday, September 30, 1916, Professor Beal was in his usual health and busy all day at his accustomed tasks in the Biological Survey. On the next day, October 1, while at home and working with his flowers, he was fatally stricken with cerebral hemorrhage. All things point to the conclusion that loss of consciousness, if not death itself, was instantaneous. It was a good way to go and the Professor himself had often expressed a wish for such a passing.

He had returned to Washington only a short time before, from a vacation spent in the land of his youth and was especially pleased with the trip. Professor Beal was in the 77th year of a life which began January 9, 1840, at South Groton (now called Ayer), Middlesex County, Massachusetts. Professor Beal's father, J. Foster Beal, at various times was a school teacher, teacher of penmanship, overseer of the poor, foreman of a railroad construction gang and farmer. He died of tuberculosis when his son was about 8 years of age. The career of the boy subsequent to the death of his father, I quote from an incomplete biographical sketch left by Professor Beal. "It became evident," he writes, "that in taking

¹ Professor Beal's given names in full are: Foster Ellenborough Lascelles.

care of my father in his last sickness, my mother had also contracted the disease and could not long survive. Her one thought was to provide for me. For this purpose she took me and visited Nathaniel C. Day of Lunenburg, Mass., who was her cousin once removed. He was a bachelor about 38 years of age and lived upon a farm where he kept a housekeeper and several hired men. He agreed to take care of me until I was of age. My mother left me the very day we arrived at the farm and I never saw her again alive. This was in early October, 1850, and she died the following December. I lived with Mr. Day on this farm for the next fourteen years. He had various housekeepers during the next three or four years but finally secured the services of Miss Harriet L. Gray. After she had worked for him for about a year, they were married. This lady took some interest in me and my tastes. I was a rather shy, quiet boy fond of reading and of nature. The other housekeepers and the hired men all thought this was nonsense. Mrs. Day, however, thought differently and encouraged me to get an education and make as much as possible of myself."

Here you will join me, I am certain, in saying "All honor to Harriet Day." Even that were weak praise for one who recognized the spark of intellectual power in this orphan boy, sheltered and aided it until it became a steady flame, past the danger of smothering or of being totally extinguished in the vitiated atmosphere of rustic indifference. We have Professor Beal's own words that he was "fond of nature" even in his early years. He has told me of some of his earliest memories relating to natural history: of finding a snake swallowing a frog; of watching a downy woodpecker drilling holes in an apple tree; and of being acquainted with all the flowers along the course he took the cattle to and from their pasturage. He loved nature, and when I tell you he was fortunate enough, in these early years to read Gilbert White's "Natural History of Selborne," you will understand he never could have slackened in this affection.

Continuing the account of his life in the Professor's own language (the period now being subsequent to his attaining majority): "During the ten years,¹ that I had been on the farm, I had been so

¹ Up to the time he was of age; it is believed he was formally apprenticed.

kindly treated by Mrs. Day, that having no other, I had come to look upon this as a home. So I remained working upon the farm of which I was now practically the foreman. My love of learning was such that, encouraged by Mrs. Day, I had demanded and obtained the privilege of attending several fall and spring terms at the Academy in Lunenburg, in addition to the regular winter term of the district school. In 1860 I attended the fall term of Lawrence Academy at Groton and was at school there when Abraham Lincoln was elected."

"In the turbulent times that followed his election and the secession of many of the southern states, I was very anxious to enlist in the Federal Army, but Mrs. Day always dissuaded me. After the disaster of our arms at Bull Run, I insisted that it was my duty to go and opposition was withdrawn. I enlisted in Company A of the 36th Massachusetts Regiment, recruited at Fitchburg, and went into camp at Worcester, Mass."

Professor Beal's regiment together with one from Maine was embarked on the transport Merrimac. One of the first entries in his diary¹ shows that his interest in natural history was irrepressible. On September 4, he notes "Last night I observed the phenomenon of the phosphorescence of the ocean." The regiment arrived at Alexandria, Va., September 6, and was transferred to Washington, D. C., the next day. Marching at intervals they reached Frederick, Md., September 18. At this period they could hear the cannon at the Battle of Antietam, and met prisoners and wounded men being taken to Washington. Professor Beal says "It was a ghastly sight. The pale drawn faces and bloody bandages made an impression that time has never effaced. It was a depressing introduction to the grim realities of war." The regiment proceeded to a point near Harper's Ferry where it was incorporated in a brigade and was reviewed by President Lincoln and Generals McClellan and Burnside on October 3. Professor Beal says "Saw all three of these worthies and took notes." After being marched about the country more or less aimlessly, Professor Beal was taken sick with chills and fever at Point of Rocks, Md., October 20. He was left behind and ordered to go to the Con-

¹ Professor Beal kept a diary during his Civil War experience and continuously from Jan. 1, 1864, until the day before his death.

valescents Camp at Harper's Ferry. He did so, and by November 10, after enduring considerable hardships, reached a similar camp at Alexandria, Va. Here the men lived in tents and looked after themselves, so they could hardly be said to be receiving treatment. On December 8, he says "the Doctor put his ear to my breast and then told me to go to the hospital." Nothing came of this order, however, and on December 29, while still in camp he was examined and recommended for a thirty day furlough. The furlough papers were not received until January 12. He left Washington the next day, reached New York and took a boat for New London. On the boat, he says "I took off my clothes for the first time in over four months and went to bed." On February 5, he was discharged from the service of the United States.

An epitome of Professor Beal's soldiering is: that he was subjected to unnecessary exposure, due to the unpreparedness of the nation in military ways, and fell a victim to the same disease that had taken both of his parents and was then discharged for disability. However, as the long subsequent course of his life attests, Professor Beal made a complete recovery.

After his discharge from the Army, the young man returned to life on the farm on which he grew up. He had a financial nest-egg derived from a small legacy from his mother's estate and wages received on the farm during the later years of his apprenticeship, and he now built a greenhouse and attempted to establish a market-gardening business. He was occupied with this and work on the farm from February, 1863, to December, 1865. Entries in his diaries show that study was not neglected during this period, and notes on birds and insects are frequent. It was at this time that he made the observations on the assembling of moths which he published several years afterward. On January 1, 1866, he began working as a gardener for a florist in Fitchburg, a position he held until the end of March, 1867. Evidently, it was at about this time that the idea of going to the Massachusetts Institute of Technology came to him. He visited Boston March 23, probably for a preliminary investigation, but he notes also that he visited the Natural History rooms — undoubtedly those of the Boston Society. From April to September, 1867, he lived with his foster-parents, the Days, at Leominster and prepared for the entrance examination to

the Institute. This he passed on October 5 and class work was begun October 7. At the end of his 1867 diary, he remarks "I have been sitting alone studying all the evening, thinking of the past and trying to look forward into the dark, misty future, and wondering what another year has of joy or sorrow, in store for me; but joy or sorrow it matters little which, a few short years and both will be as naught in the light of a higher and nobler future."

During the summer vacation of 1868, he superintended the outside work of prisoners of the Leominster jail, and at the end of the summer cared for his foster parents, both of whom were sick. Mrs. Day died in December, 1868, a great loss to the young man. Otherwise the school year of 1868-9 was uneventful. In the summer of 1869, he took a leisurely western trip by way of Chicago, Burlington, Iowa, up the Mississippi River to St. Paul, back to Prairie du Chien, Wis., Niagara Falls, N. Y., and home. Besides this, he made two short camping trips, one of them in New Hampshire. The next summer vacation was taken up by several similar outings. From the second year on, throughout his course, Professor Beal was President of his class. He was older than most of his classmates and evidently filled well the rôle of an elder brother. The Massachusetts Institute of Technology was young and when Professor Beal graduated in 1872, he was the oldest living graduate, a distinction which he naturally held the remainder of his life. During his third and fourth years at the Institute, he taught lower classmen, which sufficiently indicates that his record was a good one. The entry in his diary for March 17, 1870, is: "Delivered my first lecture today."

Professor Beal received his degree March 8, 1872, but continued school work until April 29 when he left for the West, his destination being Crete, Nebraska, where he began surveying for the Burlington and Missouri River Railroad, which is now known as the Chicago, Burlington and Quincy. This season in the prairies gave him an opportunity of studying nature under conditions entirely different from those in New England. From a sketch-book he kept at the time (and he was no mean artist), it is evident he was strongly impressed by the presence of antelope and of the abundant remains of the buffalo. This sketch-book contains pictures also of a horsefly, lubber grasshopper, milkweed butterfly, hog-nosed

snake, and other animals. Professor Beal often referred to his experiences on this trip; one reminiscence, in particular I remember, related to nighthawks. The birds immediately availed themselves of the newly-laid rails as perches, upon which, according to their custom, they sat lengthwise. They were so abundant, Professor Beal says, that he was certain there were enough nighthawks immediately along the right-of-way, to make a continuous row of the birds on both tracks clear across the state of Nebraska. The work on the railroad ended in November, and Professor returned to Boston.

The next year was spent in an attempt to establish a Civil Engineering business at Fitchburg; the field was limited however, and Professor began teaching again at the Institute of Technology in October, 1873. He taught there one school year, spent the next vacation in Boston and on camping trips, and proceeded October 5, 1874, to Annapolis, Md., where he had secured a position as Professor of Mathematics in the United States Naval Academy. The position was held only one year, but I imagine that this was not a serious disappointment to the Professor. The system of formal calls demanded by the naval social code, irked him considerably, and it is certain he would not have stayed indefinitely at the Naval Academy. During the spring of 1875 he actively collected natural history specimens around Annapolis, particularly birds, of which he mounted a number. He returned to Boston June 26. The following summer and winter were passed in Boston and Fitchburg and in short excursions in New England.

March 20, 1876, was an important date in Professor Beal's life, as it was then he started for Ames, Iowa, to take a position in the Agricultural College there; where he met the girl he was to marry and where he remained for the next seven years. After the first semester at Ames, he took an Eastern trip of about a month's duration, attending the Centennial Exposition at Philadelphia and visiting in Boston and Fitchburg. On his next visit to the east which began in November, 1876, he was married on his 37th birthday, January 9, 1877, to Mary Louise Barnes,¹ at Cortland, N. Y.

¹ Mrs. Beal was born at Bath, N. Y., July 22, 1844, and was educated in the Elmira Female College, and the Lyons Musical Academy. She has published two books for boys under the titles: "A Misunderstood Hero" and "Boys of Cloverdale." Professor Beal is survived also by a son Kenneth Foster Beal who was born March 20, 1880.

The newly married pair spent their honeymoon in Professor Beal's old haunts in Massachusetts and proceeded to Ames, Iowa, in March, 1877.

Professor Beal went to Ames as professor of civil engineering. On July 23, 1879, he notes, "heard my first class in Natural History" and on July 24, he was elected Professor of Zoölogy and Comparative Anatomy. In his 39th year, therefore, he finally was enabled to take up as a vocation what all his life had been his favorite avocation. The occasion must have been a happy one though possibly tinged with regret for the lost time. There is no doubt that Professor Beal took the course in Civil Engineering at the Institute of Technology chiefly because he did not know that a living could be made in Natural History. However, he was destined to work almost continuously in that field for the next 38 years, longer than most people are able to follow out any one line of endeavor.

During his stay at Ames, Professor Beal worked unceasingly at natural history problems; the long vacation in the midwinter was occupied largely in study of minute forms with the microscope, in research in comparative anatomy, and in collecting and mounting birds and mammals. He wrote numerous articles on the birds of Iowa which were published in Iowa newspapers, and sent a number of short contributions to the *American Naturalist*. It was at this period that his interest in the economic value of birds came to the fore; he examined the contents of birds' stomachs and his accounts of various species always contained some discussion of the food habits. Professor Beal's early studies of Economic Ornithology, thus were strictly contemporaneous with those of Professor S. A. Forbes of Illinois. These two are the founders of the scientific method of studying the economic value of birds. Professor Forbes dealt with the subject in a broad, philosophical way, but soon gave it up, while Professor Beal devoted himself practically for the remainder of his life to piling up detailed evidence, leaving the general principles to become apparent of themselves. In an article published while he was at Ames, Professor Beal gave the famous estimate that the tree sparrows of Iowa annually destroyed 196,000 bushels of weed seeds, which has been quoted hundreds of times, and which apparently will go on forever.

Perhaps, the greatest privilege enjoyed by Professor Beal at

Ames was association with intellectual men interested in the things that he had previously been compelled to study alone. Among these men were Charles E. Bessey, the botanist, Herbert Osborn, the entomologist, A. S. Welch, President and professor of philosophy, W. H. Wynn, Professor of English Literature, J. H. Macomber, Professor of Physics, T. E. Pope, Chemist, and Charles Aldrich, who like himself was interested chiefly in birds. A number of the professors including Professor Beal formed a dining club known as the Lamellibranchophagists. This organization no doubt was modeled after the contemporaneous New York Society called the Ichthyophagists, and Professor Beal was interested in the latter to the extent of sending a shipment of Iowa river mussels for trial at one of the dinners of the club.

During the last year he spent at Ames, 1882-83, Professor Beal gave courses in geology. In September of that year he went to Massachusetts and bought a farm near that on which he had grown up. Returning to Iowa he made all preparations to move the family and they were settled on the farm in December, 1883.

Here he remained for the next eight years, with the exceptions of a stay in Chicago, where he taught mathematics in the Manual Training School from January to June, inclusive, 1886, and in Washington where he held a temporary appointment in the Division of Economic Ornithology and Mammalogy from December 16, 1886, to June 30, 1887. Even when isolated from the intellectual world and occupied with the daily round of duties on his New England farm, Professor Beal did not give up his interest in scientific things. He lectured to the Grange and State Agricultural Association on various scientific subjects, and it is interesting to note, gave an address to the Lunenberg Farmers' Club on 'The Usefulness of Birds.' At this time he still wrote articles on birds for publication in the Iowa Homestead.

Professor Beal's second and permanent term of service in Washington began February 17, 1892, five years after his temporary appointment. Thereafter he worked for the Biological Survey continuously for more than twenty-four years, making a total of about twenty-five years spent in professional pursuit of the science of Economic Ornithology. During his short period of service in 1886-7, Professor Beal spent his time in making digests of answers

to questionnaires on the rice-bird or bobolink and on the English sparrow. He also studied the distribution of the latter species and prepared the range map published in Bulletin 1, 1889. Up to the time of Professor Beal's second appointment, the Biological Survey had not succeeded in finding a man to carry on systematically the examination of bird stomachs. Professor Beal proved to be the best possible choice as he threw himself immediately at the task, and except for intervals spent in field work and in preparing reports, kept steadily at it throughout his career. To what purpose he labored may be judged by the results. The grand total of bird stomachs examined by Professor Beal for the Biological Survey is 37,825, an average of more than 1500 per year. This enormous number includes birds of almost all families, but Professor Beal paid particular attention to the woodpeckers, the Icteridæ, cuckoos, flycatchers, thrushes, and swallows, upon all of which he wrote reports. He made a study also of the mockers, wrens, thrashers, titmice, creepers, nuthatches, and kinglets, but did not report upon them.

Professor Beal performed five pieces of field work for the Biological Survey; he collected material for the reference collections, and studied the feeding habits of birds, particularly nestlings, in Massachusetts, from June 11 to September 14, 1898. From May 22 to September 22, 1901, and from February 16 to October 1, 1903, and April 6 to December 11, 1906, he worked in California. From July 7 to November 25, 1909, he investigated birds in Washington, Oregon, and California. The results of the first three California trips are embodied in two 100-page bulletins on Birds of California in Relation to the Fruit Industry. Professor Beal was sole author of 20 publications of the Biological Survey, one of which — 'The Swallows, a Family of Valuable Native Birds' — has not yet been issued. He collaborated on four other bulletins, treating in a popular way, the economic value of a large number of common birds. His Farmers' Bulletin entitled 'Some Common Birds in Their Relation to Agriculture (F. B. 54, 1897, revised 1904, rewritten as F. B. 630, 1915) has been reprinted more than 50 times and over a million copies distributed. It has had the largest circulation of any Biological Survey publication, and probably indeed of any publication on American Ornithology.

On the basis of his work in Economic Ornithology, Professor Beal must be given a large share of credit for the progress that bird protection has made in the United States, and we have the most advanced laws in existence. He did more than any other man to reveal the basic facts that were needed to convince the so-called "practical" men of the value of bird protection. He often referred to the Audubon Societies as the army, fighting for bird protection, but, he said, we furnish the ammunition.

His non-official publications included ten "short articles in the 'American Naturalist,' and 'Forest and Stream,' numerous newspaper articles, mainly in the 'Iowa Homestead' and 'Iowa State Register,' and a few others in 'The Auk,' 'Science,' etc., and most important of all, his paper on "Birds as Conservators of the Forest" in the 'Report of the New York Forest, Fish and Game Commission' for 1902 and 1903.

Professor Beal also diffused knowledge of Economic Ornithology, to a certain extent, by lecturing. He read a paper on the food habits of birds at Carlin Springs, Va., in 1895, before the State Horticultural Society of New Jersey, and the Eastern New York Horticultural Society in 1899, and the California Academy of Sciences in 1901. He gave shorter talks on the same subject at meetings of the Fitchburg Grange, Potomac Valley Ornithological Club, Biological Society of Washington and Cooper Ornithological Club.

Professor Beal's connection with the American Ornithologist's Union dates from 1883 when he was elected an active member. This membership was allowed to lapse, however, and he was re-elected in 1887 and made a fellow in 1901. He attended nine meetings of the Union as follows: 1892 and 1895, Washington; 1896, Cambridge; 1898 and 1902, Washington; 1903, Philadelphia; 1903, San Francisco; and 1910 and 1914, Washington. At the 1898 meeting, he read a paper on "Polygamy among Oscines."

Professor Beal was a member also of the Cooper Ornithological Club, being transferred to the honorary roll in 1910, and of the Biological Society of Washington. He was one of the organizers of the Potomac Valley Ornithological Club (December 22, 1892) of which he was elected vice-president, January 16, 1893. This organization was short-lived, its activities merging into those of

the Biological Society of Washington. Professor Beal, however, never tired of referring to one feature connected with its organization, that being, the perfection of the Constitution and By-Laws of the Club. Frank Hitchcock, then a member of the Biological Survey, later Postmaster General of the United States was on the Committee, and his persistence in pointing out ambiguities of language and dangers of misinterpretation, resulted in giving his fellow committeemen several evenings of stiff work on a document which they, otherwise, probably would have completed at one sitting. All were agreed, however, that the finished product was strictly iron-clad, and a veritable model of its kind.

Professor Beal was a member also at one time of the Iowa Academy of Sciences, and for many years of the Massachusetts State Grange.

Having thus sketched the career of Professor Beal, it remains to appraise it. In estimating the results of his life, we must not forget the early disadvantages: his being orphaned, his struggle for an education, the comparative lack of encouragement, and total absence of advisors qualified to help him choose a career. Yet the ambition and determination were there, and although most things came to him unusually late in life, he patiently forged ahead. Taking his life as a whole, the guiding star was love of nature. It was in him early and the 'Natural History of Selborne' fixed it. Like I know not how many of us, he was also inspired by the writings of Hugh Miller. 'The Testimony of the Rocks,' and 'The Old Red Sandstone,' fired him with a zeal to collect fossils, but the metamorphic rocks about his early home yielded not one. It was not until he went to Iowa, as a teacher, that he saw fossils, and then he found them everywhere. They were in the sidewalks, in the building stones and even the roads were paved with broken crinoids; what a reward it was for his years of waiting! Professor Beal was a florist by profession and by choice; he never gave up working with flowers and he died among them. Hardly one of his diaries but was used to preserve small specimens of plants in which he was interested.

Professor had the enviable experience of spending a day in a field excursion led by Louis Agassiz, and he never ceased to refer to it with the greatest pleasure. He was always an interested

listener to the natural history experience of others, and from the enthusiasm he showed and care he took in conveying information asked for, I have no doubt he was an excellent teacher. Further evidence of this is his assertion that teaching was the hardest work he ever did.

In reviewing Professor Beal's career, an unusual handicap under which he labored must not be forgotten. For the greater part of his life he was subject to serious nose-bleeding and to violent sick-headaches. For many years, at least one day in seven, saw him incapacitated for duty. It is not surprising, therefore, that at times he manifested a tendency toward the blues. This did not interfere, however, with the development of a keen sense of humor. He greatly appreciated a good story and never lacked a better one to cap it.

Despite the presumption that he should have inherited a weak constitution from his parents, and the fact that his vitality was subjected to the severe strains above-noted, physically, Professor Beal was a marvel. Up to his 70th year he was equal to another man in his prime. At that period he took all day tramps with me, leaped over brooks and vaulted fences with ease. Symptoms appearing subsequently, and which probably were the first warnings of *angina pectoris*, together with the advice of doctors, caused him to adopt as a matter of policy, a less strenuous life. Nevertheless, he rendered full service to the Biological Survey, up to the very day of his death, besides overseeing and personally doing much of the work required to keep going a 3-acre flower, truck, and chicken farm. Bodily, he failed a little, and his memory for some things became impaired, but these changes were noted only by those who had known him long. In no sense of the word could he have been called feeble. He was indeed a grand old man and was so recognized by everyone.

Professor Beal held vigorous views and before he adopted the more staid behavior of an elderly man, was prone to express himself freely when occasion arose. He grew really eloquent at such times and often I have felt thrilled at the power of his thought and speech.

Professor was not a religious man but his life was as blameless as if it had been guided by the most perfect religion. I believe I

am absolutely correct in saying that in his relations to other people, Professor Beal was always in the right. That is a great deal to say; it means devotion to — nay it means more — means living the Golden Rule. Yet my calm judgment is that he succeeded in doing just that.

It is unnecessary, therefore, to add that he won the admiration and affection of all who became acquainted with him. Fortunately, his was not a case in which expression of these sentiments was deferred until after death. On his 70th birthday, the staff of the Biological Survey united in congratulating him and in presenting him with a loving cup. Dinners or luncheons were tendered him on all of his recent birthdays, and the occasion of his 75th, January 9, 1915, is thus recorded in his diary. "The boys took me to Harvey's and stuffed me with oysters, and then presented me with a beautiful piece of cut glass."

As noted at the outset, Professor Beal was in his 77th year. In all probability, therefore, death could not have been long deferred. Is it not much better, then, that it came before there was marked impairment either physical or mental? Certainly that is the way it appears to me, and the conviction that all was for the best for him, checks the feeling of sadness, which, after all is selfish in origin. Our nobler impulses prompt us only to high appreciation of his long career so honorable and useful, of a most admirable growing old, and of a passing that was really enviable. Professor Beal lived the life of a man, unafraid, and was fortunate enough to die in the harness. Our memories of him, therefore, can only be of one well and vigorous, alert of mind, a hard worker and a good companion. If all lives were as productive and all natures so open and honest, it would indeed be a better world.

BIBLIOGRAPHY.

Much of Professor Beal's earlier writing was published in newspapers, and is practically lost. In a scrap-book kept by the Professor are clippings of the newspaper articles hereunder listed, exact references to which are lacking. Most of the sketches were published in the Iowa State Register and in an editorial note included

with them, we are informed that they appeared in the Sunday editions of that journal. The Editor further states with reference to the articles: "They are by Professor Beal of the chair of Zoology in the State Agricultural College, and we consider them, modest as they are, to have decided merit. No one who has intelligent sympathy with the charming little world of bird life, can begin to read one of the articles without finishing it. . . . Several of our most intelligent and critical readers tell us they are charmed with them and that all the articles . . . have gone into their scrap-books." In a letter to the editor sent from Webster City, Iowa, probably by Charles Aldrich, is high praise of Professor Beal's writing. "He is master of a bright, lively, piquant style of writing and is never dull and prosy. He reminds us of Dr. Elliott Coues, and that is praise enough to award any writer on birds."

Following is a short extract from one of the sketches to illustrate Professor Beal's style. The subject — The Catbird — is one that inspired Coues also to some of his finest passages.

"There is nothing, unless it be the ubiquitous birch, more closely associated with school days in the recollections of the New England country boy, than the catbird. He always declares that he *hates* a catbird, but there are few of his surroundings with which he would more unwillingly part. The fun of stoning one of these birds is a joy not to be lightly given up and the best part of it is the bird seems to enjoy it as well as the boy, and it is certain that there results no harm to the former while the latter has all the fatigue. Down in the elder thicket by the brookside, when the boy goes to cut a stick of elder to make a pop-gun with which to enliven the dreary hours of school, the catbird meets him and taunts him with a long drawn m-i-a-u. Fired with rage at this insult he hurls stone after stone with no other effect than to put himself in a heat and waste his hour of nooning, till at last he is late to school, for which he is punished; then, while attempting to make his pop-gun during school time, he is detected, his elder and his dearly beloved jack-knife both confiscated, and he sent in disgrace to sit among the girls for the rest of the afternoon; and all because of that catbird upon whom he vows revenge."

Probably most of the articles were printed during 1876-1883 inclusive, the period of Professor Beal's residence in Iowa, but in

his diaries I find mention of articles being sent to the Iowa State Register as late as 1893. It is practically certain that a number of newspaper contributions by Professor Beal are entirely buried. For instance his diaries mention articles being sent to the Guide and the Tribune about which nothing further is known.

Most of the known sketches appeared in the Iowa State Register; these are listed below in the order in which they are arranged in Professor Beal's scrap-book.

From the Iowa State Register.

The House Wren (*Troglodites aedon*).

Description of habits, especially as to choice of nesting site and amount and kind of food consumed.

The Swallows.

General and food habits of 4 species.

The Woodpeckers.

Use of their nest cavities by other birds; general notes on habits and food.

The Sparrows.

General remarks on composition and habits of group; destruction of weed seeds.

The Nuthatch and His Friends.

General notes on the White-breasted Nuthatch, Chickadee, Brown Creeper, Downy Woodpecker, and Ruby-crowned Kinglet; value of their services in destroying insects.

The Blue Jay (*Cyanurus cristatus*).

General discussion of habits opposing the popular opinion prejudicial to the bird.

The Baltimore Oriole (*Icterus Baltimore*).

Comment on colors, nest, and food habits.

Iowa Birds. The Purple Grackle (*Quiscalus purpureus*).

Habits and economic value.

Iowa Birds. The Catbird (*Mimus carolinensis*).

General habits and summary of food.

Birds of Iowa. The Shrike or Butcher Bird. (*Lanius borealis*).

General habits and food.

Secrets of Bird Life. The Robin (*Zurdus migratorius*). [sic.]

General habits and food.

The Birds of Iowa. The Bluebird (*Sialia sialis*).

General habits and food.

The Birds of Iowa. The Fly Catcher.

The habits and economic value of the Kingbird and Phœbe.

The Birds of Iowa. The Bobolink (*Dolichonyx oryzivorzs*).

A vivid account of the birds habits, with remarks upon food.

The Birds of Iowa. The Meadow Lark (*Sturnella magna*).
General habits and food.

The Birds of Iowa. The Swifts (*Choetura pelasgia*).
Habits; only general remarks on food.

The Birds of Iowa. The Little Screech Owl (*Scops asio*).

Description of notes, the color phases, food habits, comment on a captive.

The Birds of Iowa. The Horned Lark.

Notes on habits and value as destroyers of weed seeds.

Rose-breasted Grosbeak. (*Goniaphea ludoviciana*).

Description of plumage, habits, and particularly of relations to potato beetles.

The Birds of Iowa. Brown Thrush (*Harporhynchus rufus*).

Song, habits, and food.

Game-shooting in Iowa. A suggestion as to the farmers and gentlemen sportsmen.

Suggestions for curing trespass abuses.

Our Iowa Winter Birds.

A general account of the winter avifauna; notes on food habits.

The Birds of Iowa. The Crow (*Corvus frugivorus*).

General and unfavorable account of the habits.

Place of Publication Unknown, Probably the Register.

The English Sparrow.

Unfavorable account.

Usefulness of the Seed-eating Birds.

Fringillidæ and Horned Lark.

From the Iowa Homestead.

The Marsh Wren.

Notes on the false nests, and song.

A Chapter on Snakes.

A popular account of the structure and habits.

About Bats.

Structure contrasted with that of birds; habits.

From the Chicago Herald.

How Farmers Should Treat the Birds.

Protect them, furnish nesting sites, and nest boxes.

Prof. Beal's other publications follow in chronological order.

"Assembling" among Moths. *Am. Nat.*-8, No. 4, April, 1874, pp. 234-236.

Males of *Promethæus* moth attracted to vicinity of female cocoon.

(Report of the Professor of Civil Engineering) 7th Biennial Rep. Board of Trustees, Iowa Agr. Coll. (1876-7), 1877, pp. 90-93.

Limited Appropriations Needed from the State. By Budd, J. L. and

Beal, F. E. L. 7th Biennial Rep. Board of Trustees, Iowa Agr. Coll. (1876-7), 1877, pp. 121-125.

Relates to roads, garden, and sewer.

Birds' Nests in Unusual Places. *Forest & Stream* 10, No. 7, March 21, 1878, p. 118.

Robin's nest on ground.

Our Most Useful Birds. *Trans. Iowa State Hort. Soc.* 1878, pp. 350-355, 1879.

This article contains the original estimate of the quantity of weed seeds destroyed by winter birds in Iowa: 196,537 bushels. In various forms this statement still has constant currency in the press.

Report of the School of Biology. By Bessey, C. E. and Beal, F. E. L. 8th Biennial Rep. Board of Trustees, Iowa Agr. Coll. (1878-9), 1879, pp. 188-190.

Report of the School of Civil Engineering. 8th Biennial Rep. Board of Trustees, Iowa Agr. Coll. (1878-9), 1879, pp. 195-6.

Sandie. *The College Quarterly*, Iowa Agr. Coll., Ames, 2, No. 2, July, 1879, pp. 45-47.

Account of a tame sandhill crane; notes on food.

The Northern Waxwing in Iowa. *Forest & Stream* 13, No. 22, Jan. 1, 1880, p. 947.

Occurrence at Ames, Nov., 1879.

The Potato Bug Bird Again. *Forest & Stream* 13, No. 25, Jan. 22, 1880, p. 1005.

Rose-breasted Grosbeak eating potato beetles.

Greenhouses. *The College Quarterly*, Iowa Agr. Coll., Ames, 3, No. 2, July, 1880, pp. 32-33.

Tardigrades and Eggs. *Am. Nat.* 14, No. 8, Aug., 1880, pp. 593-594, 3 figs.

Eggs laid in shed skin.

Report of the Department of Civil Engineering. 9th Biennial Rep. Board of Trustees, Iowa Agr. Coll. (1880-81), 1881, pp. 45-46.

Report of the Department of Zoology. 9th Biennial Rep. Board of Trustees, Iowa Agr. Coll. (1880-81), 1881, pp. 47-48.

"During the past year one young lady student had made a special study of birds, in relation to their food habits, and has ascertained some important facts," p. 48.

This young lady was Miss M. J. Crossmun, the results of whose studies were published in an article entitled "Food of Birds" in *Trans. Iowa State Hort. Soc.* for 1881 (1882), pp. 264-276. A brief introduction is by Professor Beal. Data obtained from stomach examination are given for the Bluejay, Cuckoo, Baltimore Oriole, Kingbird, Robin, Catbird, Brown Thrasher, White-throated Sparrow, and Crow Blackbird. In the last instance the information based on 44 stomach analyses is presented in considerable detail.

Migrations of the Sand-hill Crane. *Am. Nat.* XV, No. 2, Feb., 1881, pp. 141-142.

Drifting backward before wind.

A Shower of Cyclops quadricornis. *Am. Nat.* XV, No. 9, Sept., 1881, pp. 736-737.

A "blood rain" in Henry County, Iowa.

Does the Crow Blackbird eat Crayfish? *Am. Nat.* XV, No. 11, Nov., 1881, pp. 904-905.

Gastroliths found in stomachs probably picked up as grinding material.

Ampelis cedrorum as a Sap-sucker. *Bull. Nutt. Orn. Club.*, 7, No. 1, Jan. 1882, p. 54.

Taking sap flowing from broken twigs.

Nesting Habits of the Horned Lark. *Am. Nat.* 16, No. 3, March, 1882, pp. 240-241.

In very early spring.

Report of Committee on Ornithology. *Trans. Iowa State Hort. Soc.* for 1882, pp. 289-301, 1883.

An account of the habits and usefulness of the family of woodpeckers in general and of 7 Iowa species in particular.

Twigs Killed by Telephone Wires. *Am. Nat.* 20, No. 9, Sept., 1886, pp. 806-7.

Some Notes on Bird Migrations. *Am. Nat.* 20, No. 9, Sept., 1886, pp. 817-819.

Woodpeckers in Chicago; birds killed at lighted tower.

Food Habits of the Cedar Bird (*Ampelis cedrorum*). *Annual Report, U. S. Dept. of Agr.*, 1892, pp. 197-200.

Report upon the examination of 125 stomachs.

The Crow Blackbirds and Their Food. *Yearbook, U. S. Dept. of Agriculture* 1894, pp. 233-248, fig. 25.

This is the most authoritative account of the food of any species of bird, being based upon the examination of 2,258 stomach contents.

The Food and Tongues of Woodpeckers. *Biological Survey Bulletin* 7, 44 pp. 5 pls., 1895. Preliminary report on the food of woodpeckers (pp. 7-33, 1 pl. frontispiece, figs. 1-4).

Formal reports on the food habits of 7 species of woodpeckers and brief notes upon 3 others are given.

The Meadow Lark and Baltimore Oriole. *Yearbook U. S. Dept. of Agriculture*, 1895, pp. 419-430, figs. 110-111.

The food habits of both species are fully discussed, and the verdict in each case is in favor of the bird.

A Demand for English Names. *Auk*, 12, No. 2, April, 1895, pp. 192-194.

Cites popular use of scientific names, and impracticability of making to order common names.

Busy Bird Architects. The Marsh Wren and his Fondness for Constructing Nests. *Washington, D. C., Evening Star*, July 6, 1895.

The Bluejay and its Food. Yearbook U. S. Dept. of Agriculture 1896, pp. 197-206, figs. 40-42.

This is a complete discussion of the range, habits, and economic value of the bluejay. Details are given as to the insect and vegetable food, and experiments to determine preferences of a captive jay are described.

Food of the European Rook (*Corvus frugilegus*). Science N. S. 3, pp. 918-919, June 26, 1896.

Review of paper by M. Hollrung.

Birds that Injure Grain, Yearbook U. S. Dept. of Agriculture, 1897, pp. 345-354.

Professor Beal discusses the cause of the increase in numbers of the principal grain-eating birds, outlines the damage done, and gives somewhat extended accounts of the food habits of 5 species, particularly in relation to grain. Four other species are briefly mentioned.

Recent Investigations of the Food of European Birds. Auk 14, No. 1, Jan. 1897, pp. 8-14.

Review of John Gilmour's article on rook, starling, and wood-pigeon, M. Hollrung on rook, and comparison of food-habits of rook with those of American crow.

Some Common Birds in their Relation to Agriculture. Farmers' Bulletin 54, 40 pp. 22 figs. May, 1897. Revised edition. 48 pp. 22 figs., March, 1904.

See discussion under Farmers' Bulletin 630, 1915.

Cuckoos and Shrikes in their Relation to Agriculture. Biological Survey Bulletin 9, 26 pp. 1 pl. 1 fig. 1898. The food of cuckoos (pp. 7-14, fig. 1).

After noting briefly the general habits of the Yellow-billed and Black-billed Cuckoos, this bulletin treats their food habits collectively.

Some of the Economic Relations of Birds and their Food. Proc. 24th Ann. Session N. J. State Hort. Soc., Jan., 1899, pp. 104-129.

The Feeding Habits of the Chipping Sparrow and the Winter Food of the Chickadee. Bird-Lore 1, No. 3, June, 1899, pp. 97-98.

Review of 2 papers by Clarence M. Weed.

[Review]. Bird-Lore 1, No. 4, Aug., 1899, pp. 133-4.

Review of an article entitled "Birds" by Annie M. Grant and of "The Birds of Ontario in relation to Agriculture by Chas. W. Nash."

Food of the Bobolink, Blackbirds, and Grackles. Biological Survey Bulletin 13, 77 pp. 1 pl. (map). 6 figs. 1900.

This bulletin contains formal reports on the food habits of the Bobolink, the Cowbird, and 7 species of blackbirds. Tabulations of the principal food items, by months, follow the general account of each species, and diagrams graphically conveying the same information are given for the Bobolink, Cowbird, and Red-winged Blackbird.

How Birds Affect the Orchard. Yearbook U. S. Dept. of Agriculture, 1900, pp. 291-304, figs. 34-38.

Birds affect orchards directly by stealing fruit, feeding upon buds, flowers, or the inner bark and sap of the trees, and indirectly by destroying mammals and insects injurious to orchards. This article gives brief accounts of the birds most important in these relations.

Remarks on Economic Value of Nighthawks. Educational Leaflet No. 1, Nat. Comm. Audubon Soc., Jan. 1, 1903, pp. [2-4].

The Relation of Birds to Fruit Growing in California. Yearbook U. S. Dept. of Agriculture 1904, pp. 241-254.

Most of this article is devoted to the discussion of the species injurious to fruit, but some of the chief enemies of fruit pests are briefly mentioned.

Birds as Conservators of the Forest. Rep. New York Fish and Game Commission 1902-3 (Nov., 1906), pp. 236-274, 2 figs., 14 colored plates.

A fresh and important discussion of the birds that have especial relation to forests.

Birds of California in Relation to the Fruit Industry. Part I. Biological Survey Bulletin 30, 100 pp. 5 pls. (1 colored), Nov. 11, 1907.

The food habits of 35 species are fully discussed, including the most important species from the tanagers to the thrushes, in systematic order, together with the linnet, or house finch, the worst fruit pest among the birds in the State. The account of this species is based upon the examination of 1,206 stomachs.

The Relations Between Birds and Insects. Yearbook U. S. Dept. of Agriculture, 1908, pp. 343-350.

The principal points made in this paper are that birds are a very important check upon insects and that their true function is not so much to destroy this or that insect pest as it is to lessen the numbers of the insect tribe as a whole.

Birds of California in Relation to the Fruit Industry. Part II. Biological Survey Bulletin 34, 96 pp. 6 colored pls. Aug. 8, 1910.

A continuation of Bulletin 30, dealing with 32 species of birds, in the families Tetraonidae to Fringillidae inclusive. The conclusion is stated that only four species of birds common in California, can be regarded of doubtful utility. These are the house finch, California jay, Steller jay and red-breasted sapsucker.

Food of the Woodpeckers of the United States. Biological Survey Bulletin 37, 64 pp. 6 pls. (5 colored), 3 figs. May 24, 1911.

The accumulation of woodpecker stomachs in the 16 years since the publication of Bulletin 7 enabled Professor Beal to present in Bulletin 37 formal reports on the food habits of 16 species, 9 more than were treated in the preliminary report. Brief notes upon the food of 6 other species also are included; the food of 11 species of woodpeckers which were not even mentioned in Bulletin 7 is discussed.

Our Meadowlarks in Relation to Agriculture. Yearbook U. S. Dept. of Agriculture, 1912, pp. 321-324.

In this treatise the two North American species of meadowlarks are considered together, as their habits and food are practically identical. In

the laboratory 1,514 stomachs were examined, and the birds proved to be mainly insectivorous, with their vegetable food (22.78 per cent) taken mostly in the winter months. The author concludes that the meadow-larks are ordinarily very beneficial, but under certain local conditions, may do appreciable damage, principally to grain.

Some Common Game, Aquatic, and Rapacious Birds in Relation to Man. By W. L. McAtee and F. E. L. Beal. Farmers' Bulletin 497, pp. 30, figs. 14, May 6, 1912.

This bulletin contains brief accounts of the food and economic status of 19 birds of which those on the California Quail and Franklin's Gull were prepared by Professor Beal.

The Nighthawk. Educational Leaflet No. 1 (2nd ed.), Nat. Assoc. Audubon Soc., pp. 1-4, 1 pl., 2 figs., July 1, 1912.

Entirely revised from original edition of 1903.

The Tree Sparrow. Educational Leaflet No. 16, Nat. Assoc. Audubon Soc., 4 pp., 1 pl., 1 fig., July 1, 1912.

Food of Our More Important Flycatchers. Biological Survey Bulletin 44, pp. 67, pls. 5 (4 colored), Sept. 19, 1912.

This is a formal report on the food of 17 species of our flycatchers based upon examination of 3,398 stomachs.

Food of Some Well-known Birds of Forest, Farm, and Garden. By F. E. L. Beal and W. L. McAtee. Farmers' Bulletin 506, pp. 35, figs. 16, September 25, 1912.

The food and economic status of twenty species of birds are briefly discussed. Accounts of the following were prepared by Professor Beal: Arctic Three-toed Woodpecker, American Three-toed Woodpecker, California Woodpecker, Lewis Woodpecker, Red-bellied Woodpecker, Ruby-throated Hummingbird, Anna's Hummingbird, Arkansas Kingbird, Ash-throated Flycatcher, Western Flycatcher, Chipping Sparrow, Junco, White-crowned Sparrow, Southern Butcher-bird, Audubon Warbler, and Ruby-crowned Kinglet.

Fifty Common Birds of Farm and Orchard. By various members of the Biological Survey. Farmers' Bulletin 513, 31 pp., 50 colored figures, 1913.

The separate accounts of birds prepared by Professor Beal are those on the Bluebird, Robin, Russet-backed Thrush, Ruby-crowned Kinglet, Chickadee, White-breasted Nuthatch, Brown Creeper, House Wren, Myrtle Warbler, Loggerhead Shrike, Barn Swallow, Purple Martin, Song Sparrow, Chipping Sparrow, White-crowned Sparrow, Crow Blackbird, Brewer's Blackbird, Bullock's Oriole, Meadowlark, Red-winged Blackbird, Bobolink, Arkansas Kingbird, Kingbird, Flicker, Downy Woodpecker, and Yellow-billed Cuckoo.

Food of the Robins and Bluebirds of the United States. Department Bulletin 171, pp. 31, figs. 2, February 5, 1915.

This bulletin consists of formal reports on the food of our five species of Robins and Bluebirds, of which a total of 2,432 stomachs were examined.

Some Common Birds Useful to the Farmer. Farmers' Bulletin 630, pp. 27, figs. 23, February 13, 1915.

In this bulletin are discussed the food habits of 59 species of birds. The bulletin was prepared to take the place of Farmers' Bulletin 54 originally issued in 1897 which contains summaries of the food habits of 28 species and brief references to the nature of the food of 8 others. The revised edition (1904) contains 40 specific summaries and notes on 14 species. Farmers' Bulletin 630 is the one article on bird food to have if the complete series of bulletins and other publications of the Biological Survey is inaccessible. Many of the food summaries, though brief, are important, being based on the examination of large numbers of stomachs.

Farmers' Bulletin 630 and its forerunners have been reprinted more than 50 times and a total of over a million copies have been distributed.

Food Habits of the Thrushes of the United States. Department Bulletin 280, pp. 23, figs. 2, September 27, 1915.

Bulletin 280 is a formal report on the food of the thrushes, other than the robins and bluebirds, of the United States. There are six species plus subspecies of three and a total of 1,453 stomachs were examined.

The Bird's Impulse to Song. Country Life (London), 39, p. 520, April 22, 1916.

In response to a letter about the singing of birds along the battle line in France. Professor Beal shows that various forms of excitement are apt to inspire song.

Common Birds of Southeastern United States in Relation to Agriculture. By F. E. L. Beal, W. L. McAtee, and E. R. Kalmbach. Farmers' Bulletin 755, 39 spp., 20 figs., Oct. 26, 1916.

The accounts of the food habits of 13 of the 23 species treated were prepared by Professor Beal.

The Swallows, a Family of Valuable Native Birds. Bulletin No. — U. S. Department of Agriculture, 191—.



1. NEST OF WILSON'S WARBLER.
2. NEST OF PHILADELPHIA VIREO.

SOME SUMMER BIRDS OF NORTHERN NEW
BRUNSWICK.

BY P. B. PHILIPP AND B. S. BOWDISH.

Plates VII-IX.

DURING the past summer the authors made a second reconnaissance of the region in northern New Brunswick covered by the previous year's study of the breeding of the Tennessee Warbler, which was described in 'The Auk' for January, 1916. The period embraced by this study in 1915, was from June 18 to July 2; that in 1916 from June 2 to 27.

The nature of the country visited, having been described in the above mentioned paper, repetition of that description is unnecessary. An annotated list of the birds noted follows:

Gavia immer. LOON.—Frequently noted. Doubtless breeds.

Larus marinus. GREAT BLACK-BACKED GULL.—A number noted.

Larus argentatus. HERRING GULL.—Common and doubtless breeds.

Sterna hirundo. COMMON TERN.—Abundant. Breeds.

Phalacrocorax auritus auritus. DOUBLE-CRESTED CORMORANT.—A few noted.

Mergus serrator. RED-BREASTED MERGANSER.—Abundant. Breeds.

Anas rubripes. BLACK DUCK.—Common. Breeds.

Marila marila. SCAUP DUCK.—Breeds sparingly. A few seen throughout our stay, both years, and a parent with brood of small young noted, June 19, 1915.

Branta bernicla glaucogastra. BRANT.—Two flocks of at least sixty each noted June 3, 1916.

Botaurus lentiginosus. BITTERN.—A few scattering birds seen and heard during 1916 visit.

Ardea herodias herodias. GREAT BLUE HERON.—One noted July 1, 1915.

Gallinago delicata. WILSON'S SNIPE.—On June 15, 1916, we saw a pair of these birds whose actions gave all the indications of nesting. Under the same conditions, they were noted on several later occasions. The situation was boggy ground of excellent character for the breeding of these birds, but no nest was discovered.

Totanus melanoleucus. GREATER YELLOW-LEGS.—A few noted with Black-bellied Plover, June 4, 1916.

Actitis macularia. SPOTTED SANDPIPER.—Fairly abundant breeder.

Squatarola squatarola. BLACK-BELLIED PLOVER.—A flock of twelve

or fifteen noted on the day of our arrival, June 2, 1916, and for several days thereafter.

***Ægialitis meloda*.** PIPING PLOVER.— June 5 we found a small colony of breeding birds, five nests, each containing four eggs, being located. The nests were on sandy beach, some in the open, others among sparse clumps of beach grass. They were slight hollows in the sand, some quite unlined, others with a well formed rim of bits of broken shell or slate. The sitting birds usually flushed before they were seen, while the intruder was at a distance of a hundred feet, or more, and, sneaking quietly away, gave no clue to the whereabouts of the nest. If concealment offered, and one observer remained hidden, while the other walked away, the parent bird soon returned to the nest. In most instances incubation was well advanced.

***Bonasa umbellus togata*.** CANADIAN RUFFED GROUSE.— Common breeding bird. On June 16, 1916, a parent with brood of recently hatched young was observed, and others were noted with young on various occasions during both visits.

***Accipiter velox*.** SHARP-SHINNED HAWK.— One noted June 10, 1916.

***Haliaeetus leucocephalus leucocephalus*.** BALD EAGLE.— Common. Breeds.

***Pandion haliaetus carolinensis*.** OSPREY.— One seen June 12, 1916.

***Asio flammeus*.** SHORT-EARED OWL.— June 19, 1915, we found two nests of these birds, each containing five young, in varying stages of development, the largest being nearly a third grown, the smallest not appearing to be over a week old. In 1916 no birds were seen in the same locality.

***Ceryle alcyon alcyon*.** BELTED KINGFISHER.— Abundant breeding bird.

***Dryobates villosus leucomelas*.** NORTHERN HAIRY WOODPECKER.— A few noted in both visits. A nest with young observed early in June, 1914.

***Dryobates pubescens medianus*.** DOWNY WOODPECKER.— Apparently breeds sparingly. Nest with young noted June 14, 1916.

***Picoides arcticus*.** ARCTIC THREE-TOED WOODPECKER.— June 24, 1915, we found a nest of this species about ten feet up in a hard, bare, dead snag, in a partial clearing. It contained young still too small to appear at the entrance. June 10, 1916, another nest was located, some twenty feet from the ground, in a dead yellow birch, in partial clearing. This nest also contained young, which had left it by the 14th.

***Picoides americanus americanus*.** THREE-TOED WOODPECKER.— One seen June 21, 1916.

***Sphyrapicus varius varius*.** YELLOW-BELLIED SAPSUCKER.— Common breeding bird. June 7, 1916, one nest contained five fresh eggs, another five well incubated eggs, and of three other occupied nests, which were not investigated, one appeared to have young. On the 9th, another nest held five fresh eggs. Another nest, found on the 14th, evidently contained young as we could plainly hear them. The favorite situation was the dead heart of a live poplar, most often on the bank of a stream, and

facing same, but some nests were in totally dead trees, of different kinds. They ranged from eight to forty feet from ground.

Phlœotomus pileatus abieticola. NORTHERN PILEATED WOOD-PECKER.— One noted June 12, 1916.

Colaptes auratus luteus. FLICKER.— Fairly common. Breeds.

Antrostomus vociferus vociferus. WHIP-POOR-WILL.— Several heard.

Chordeiles virginianus virginianus. NIGHTHAWK.— Very common. Breeds. One found sitting on two nearly fresh eggs, June 21, 1916.

Chætura pelagica. CHIMNEY SWIFT. A few noted.

Tyrannus tyrannus. KINGBIRD. Several noted.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER. Frequently noted on both visits.

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER. Fairly common. A nest found with one egg on June 21, 1916, on the 24th, contained three eggs, on which the bird was sitting quite closely. It was built on the ground in the side of a large tussock of moss on which grew a scant covering of low sheep laurel bushes. The nesting site was an extensive, fairly open tamarack and spruce bog, and the tussock selected for the nest was a few yards from the edge of the thick spruce forest surrounding the bog. The nest was quite open and was a firmly built structure well cupped, composed of a thick foundation of dead fine grass with a few sphagnum moss fronds, well lined with fine dried grasses and some species of fine black rootlets. The three eggs were fresh and measured $.69 \times .52$, $.65 \times .52$, $.66 \times .52$. The nest measured, outside diameter 3 inches, inside diameter $1\frac{1}{2}$ inches; outside depth, 2 inches, inside depth $1\frac{1}{2}$ inches. The eggs are typical flycatcher eggs and cannot be mistaken for those of any of the small ground nesting warblers, and are of a white ground color, sparsely spotted, chiefly at the larger end, with fine reddish brown spots.

Cyanocitta cristata cristata. BLUE JAY. Apparently not common. Only one or two noted.

Perisoreus canadensis canadensis. CANADA JAY.— Common. On the occasion of our visits the birds were in family parties,— pairs of adults with families of usually three well grown, but dusky young.

Corvus brachyrhynchos brachyrhynchos. CROW.— Common. Breeds.

Euphagus carolinus. RUSTY BLACKBIRD.— A number of birds with well grown young seen on both visits.

Quiscalus quiscula æneus. BRONZED GRACKLE.— Abundant. Breeds. Large young observed June 2, 1916.

Pinicola enucleator leucura. PINE GROSBEAK.— Two noted June 12, 1916.

Carpodacus purpureus purpureus. PURPLE FINCH.— Common. Breeds.

Loxia leucoptera. WHITE-WINGED CROSSBILL.— Two June 3, 1916.

Astragalinus tristis tristis. GOLDFINCH.— A few noted.

Spinus pinus. PINE SISKIN.—Noted quite commonly in early June, 1916, in pairs. Doubtless breeds.

Poocetes gramineus gramineus. VESPER SPARROW.—Common. Breeds.

Passerculus sandwichensis avanna. SAVANNAH SPARROW.—Common. Breeds.

Zonotrichia leucophrys leucophrys. WHITE-CROWNED SPARROW.—One noted.

Zonotrichia albicollis. WHITE-THROATED SPARROW.—Abundant breeding bird. Two of the nests found were in small spruces, one being forty inches from ground to bottom of nest, and both unusually bulky. One nest noted contained a lining of moose hair.

Spizella passerina passerina. CHIPPING SPARROW.—Common. Breeds.

Junco hyemalis hyemalis. SLATE-COLORED JUNCO.—Common. Breeds. Two nests with five eggs each noted.

Melospiza melodia melodia. SONG SPARROW.—Common. Breeds.

Melospiza lincolni lincolni. LINCOLN'S SPARROW.—Apparently not rare. A nest with five fresh eggs was found June 12, one with four small young and another with four well incubated eggs on June 21. These nests are well hidden in tussocks in marshy ground, and are hard to find as the bird sneaks off in a mouse like fashion and easily escapes notice. The nests and eggs largely resemble those of Song Sparrows, the nests noted differing in the absence of hair in the lining.

Melospiza georgiana. SWAMP SPARROW.—One noted June 10, 1916.

Piranga erythromelas. SCARLET TANAGER.—One noted June 6, 1916.

Petrochelidon lunifrons lunifrons. CLIFF SWALLOW.—Abundant breeding bird.

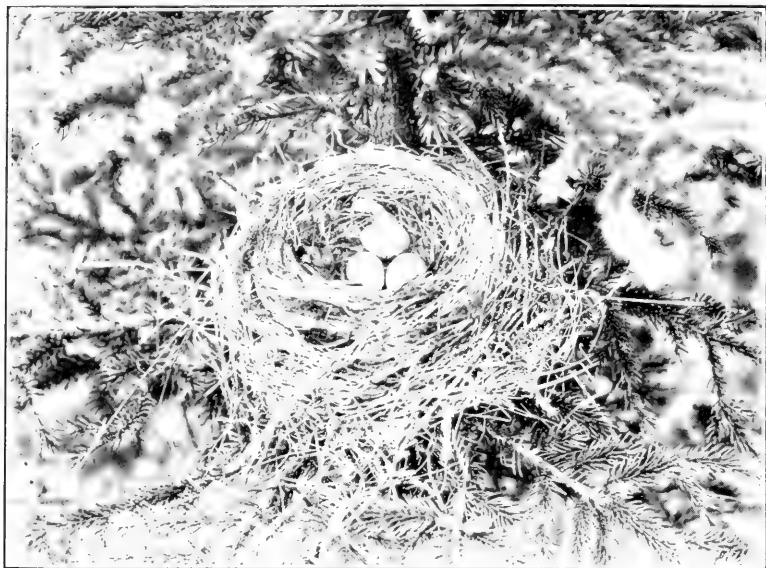
Hirundo erythrogastra. BARN SWALLOW.—Common. Breeds.

Iridoprocne bicolor. TREE SWALLOW.—Common. Breeds. A nest found June 12, 1916, contained six well incubated eggs.

Riparia riparia. BANK SWALLOW.—Common. Breeds. On June 19, 1916, the nests examined in a fair-sized colony contained mostly five fresh or nearly fresh eggs, each.

Bombycilla cedrorum. CEDAR WAXWING.—Noted commonly.

Vireosylva philadelphica. PHILADELPHIA VIREO.—Three nests with eggs of this species were found during our 1916 visit, and a number of pairs of birds were noted, where the nests were not located. The situations where nests were found, as well as where additional birds were observed, were, in every instance, on islands or along the shores of river bottoms, with a growth of willow and alder. The nests found were in slender forks of alder, at a height varying from ten to seventeen and one half feet (the latter actual measurement). On June 17, two of these nests held four eggs each, the third five, the only set of five vireo eggs of any species, of which we have knowledge. The nests are very beautiful structures, and quite different from those of the other Eastern Vireos. They are most compactly



1. NEST OF OLIVE-BACKED THRUSH.
2. NEST OF YELLOW PALM WARBLER.

built with thick outer walls of strips of birch bark, bits of rotten wood and the outer coverings of coarse weeds, well interlined with strands of a wiry moss (some species of *usnea*), this outer material giving the nests a tawny appearance, and even though, on June 6, 7 and 8, when the nests were first discovered, the alders were far from being in full foliage, they were very difficult to discern. Fine strands of some tree moss were used to bind the exterior material in position, the abundance of this material varying. Fine whitish shreds of grass and a little black hair formed the lining. One nest measured $2\frac{3}{4} \times 1\frac{1}{2}$ inches in depth, and $2\frac{7}{8} \times 1\frac{3}{4}$ inches in diameter. The eggs from this nest measured $.76 \times .53$, $.73 \times .55$, $.74 \times .55$, and $.75 \times .55$, in., and were white with dark brown spots and specks, the larger spots tending to have a rusty border, and resemble eggs of the Red-eyed Vireo, though smaller. The markings were rather sparse, fairly well distributed over the whole surface, though tending to greatest abundance about the larger ends. The eggs of the other set of four measured $.72 \times .54$; $.74 \times .55$; $.76 \times .56$; $.72 \times .54$ in. and the nest $2\frac{3}{4} \times 2$ inches outside diameter; $2\frac{1}{4} \times 1\frac{1}{4}$ inside diameter; $2\frac{1}{2}$ outside depth; $1\frac{3}{4}$ inside depth, in inches. The birds sit close, and when disturbed from the nest come close about the intruder, with none of the shyness that marked the behavior of Solitary Vireos whose nests we found. Mr. William Brewster described the song, in the Bulletin of the Nuttall Ornithological Club, Vol. V, 1881, p. 5, as being in general scarcely distinguishable from that of the Red-eyed Vireo, but mentioned that the present species "has, however, one note which seems to be peculiarly its own, a very abrupt, double-syllabled utterance with a rising inflection which comes in with the regular song at irregular but not infrequent intervals." In our experience with the birds, this distinctive song absolutely predominated with the general impression of a song quite distinctive from that of the Red-eye, or, in fact, of any other Vireo we had heard. These birds have the common scolding note characteristic of Vireos, but, in addition, they gave voice to several rather musical, but apparently protesting notes. In one instance, the female sung a subdued but musical reply to the song of her mate who was at a little distance from the nest on which she sat. Writers refer to color differences as furnishing the key to the identity of this species, but we found, in addition to this, that the difference in size is so apparent as to be very readily noticeable.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO.—Common. Breeds. Two nests, each with four fresh eggs, were found on June 7 and 17, respectively. The former was about ten feet from the ground in a slender fork of a cedar tree, the exterior material being bound on with a considerable profusion of tree moss strands. The other was about six feet above the ground, in a spruce fork.

Mniotilta varia. BLACK AND WHITE WARBLER.—Not common. Several seen on both visits.

Vermivora rubricapilla rubricapilla. NASHVILLE WARBLER.—In 1916 we found this species far more abundant than we did in the previous

year. Two nests, containing six and four eggs, respectively, were located, the situation and general appearance being much like those of the Tennessee Warbler nests. An unusually situated nest was found in 1915 on dry upland, in a grove of small pines.

Vermivora peregrina. TENNESSEE WARBLER.—To our experiences with this bird in 1915, as described in 'The Auk' for January, 1916, we would simply add that our 1916 experiences confirm the former ones. Fourteen nests were found, of which four contained seven eggs each, six contained six, three contained five eggs each, and one contained five newly hatched young, which were covered with black down. The earliest nest with five well incubated eggs was found on June 11. A nest was found June 12 containing five fresh eggs, a sixth being laid the following day. In the case of the latest nest, the sixth egg was laid on the morning of June 27—the day of our departure. The nest of young was found on June 25. Our data for this second visit would seem to indicate that the breeding season is liable to vary considerably with different individuals.

Compsothlypis americana usneæ. NORTHERN PARULA WARBLER.—One seen, June 15, 1916, a male, in song.

Dendroica caerulescens caerulescens. BLACK-THROATED BLUE WARBLER.—Fairly common. Breeds.

Dendroica coronata. MYRTLE WARBLER.—Common. Breeds.

Dendroica magnolia. MAGNOLIA WARBLER.—Abundant breeding bird.

Dendroica castanea. BAY-BREASTED WARBLER.—Common. Nearly every suitable bit of woods contained at least one pair of these birds. Six nests were found in 1915, as follows: one with seven fresh eggs, June 25; one with six fresh eggs, June 26; two with six eggs each, one fresh, the other about half incubated, June 27; one with seven half incubated eggs, June 29; and one with six eggs, incubation advanced, July 1. These nests were in small spruces, two of them being well out on horizontal limbs, the others close to the trunk, at heights varying from four to ten feet. None were very well concealed and some of them were remarkably open, but they blended so well with their surroundings that they were exceedingly difficult to discern. All of the nests of this species that we found resemble large structures of the Magnolia Warbler, being rather loosely constructed, of fine spruce or similar twigs, exteriorly, a little dead grass and some insect webs entering into the composition, and fine, black rootlets being commonly used as a lining. Although the birds were apparently as abundant as in 1916, only three nests were located, one with six fresh eggs June 14, eight feet up, one with six slightly incubated eggs, June 23, fifteen feet from ground, supported by two horizontal branches, against the main stem of a small balsam, near its top, in a clump of same, in partial clearing in spruce forest; the other with six slightly incubated eggs, twenty feet up against the trunk of a spruce tree at the edge of a clearing. This latter nest was in a very thick portion of the foliage and absolutely invisible from the ground, being found only by flushing the bird. A nest found June 27,



1. NEST OF BAY-BREASTED WARBLER.
2. NEST OF YELLOW-BELLIED FLYCATCHER.

1915, measured 2.50×1.25 inches in depth, and 3.50×2.12 inches in diameter. Another found June 23, 1916, measured 2.37×1.50 inches in depth and 4×2.12 inches in diameter. The eggs in the first of these two nests measured $.69 \times .52$, $.69 \times .52$, $.69 \times .51$, $.68 \times .52$, $.70 \times .54$, $.71 \times .54$. The ground color is a faint greenish-gray shade, heavily marked with spots and specks of reddish brown, with one or two slight washes of lighter tint and lavender shell blotches. The eggs in the other nest measured $.71 \times .56$, $.67 \times .55$, $.72 \times .55$, $.70 \times .54$, $.71 \times .55$, $.73 \times .55$. The ground color was rather more grayish than in the former set, thickly marked with lighter reddish brown, more in blotches, with lavender shell blotches. A set of seven measured $.73 \times .55$, $.73 \times .55$, $.70 \times .54$, $.73 \times .55$, $.73 \times .54$, $.73 \times .55$, $.73 \times .54$; and the nest outside diameter 4 inches with a depth of 2 inches; inside diameter 2.15, inside depth 1.15 inches. These eggs were very heavily blotched with reddish brown and lavender, chiefly at the larger end, with a ground color of a pale blue. Some of the nests found were substantial and well built structures, though exteriorly loose, others very frail, one on a horizontal limb being so thin of bottom as to endanger the eggs falling through.

The song is of a character quite similar to that of the Blackburnian Warbler, but slightly stronger and louder. It is delivered for long periods, with considerable frequency, and at all times of day, though less frequently toward the middle of the day. It appears that the female sings from the nest, in answer to the male, and the song is markedly weaker, being scarcely distinguishable from that of the Blackburnian Warbler. The approach of an intruder is apt to cause the female to become silent.

Dendroica striata. BLACK-POLL WARBLER.—Fairly common. Breeds.

Dendroica fusca. BLACKBURNIAN WARBLER.—A not very common breeding bird.

Dendroica virens. BLACK-THROATED GREEN WARBLER.—Fairly common breeder. A nest with four slightly incubated eggs was found on June 23, 1915, about five feet from ground in little balsam in thick growth of same, in a clearing in the woods, and another, near the same place, and also in a little balsam, the bottom of the nest being only twenty-seven inches from the ground, was found June 19, 1916, containing four fresh eggs.

Dendroica palmarum hypochrysea. YELLOW PALM WARBLER.—Fairly common breeding bird in suitable spots. While the majority of the birds and nests noted were in damp, boggy ground, as recorded by Knight in the Birds of Maine, one small breeding colony were nesting on high, dry ground, in a grove of small pines. Here, on June 24, 1915, a nest with four well incubated eggs was found, at the base of a tiny spruce and some shoots, quite unconcealed. Another with four newly hatched young was on a quite bare spot of ground, but concealed under a low hanging branch of a little spruce. On this occasion it appeared probable by the action of the birds, that most nests held young. On June 28 another nest with five eggs was found, incubation almost complete. It was well concealed in a grass tussock in a boggy little creek bed. In 1916, on June 9, a nest with

four partly incubated eggs was found in the top of a tussock in a bog, under a little spruce, but not very well concealed, and another in a thick little spruce, bottom of nest fourteen inches above ground, containing four fresh eggs. On June 14 a nest was found in a pine grove where, in 1915, birds were noted, containing five young, several days old. It was on dry ground, under a little spruce. On June 15 a nest with four well incubated eggs was found in a tussock in a large bog. Another nest, containing four newly hatched young was found in a tussock in the same bog, June 19. A sixth nest, also containing small young, situated in a tussock in a bog, was found June 20. On June 21, in boggy ground, birds were observed feeding young out of the nest. On June 23 a deserted nest of this species was found in a tussock, well concealed by a small spruce growing over it, containing five eggs in which incubation had advanced prior to desertion. Slight decay of embryos had commenced. Though lacking parent birds, the identity of this nest, owing to composition and situation, was well established. The nest found in the spruce on June 9 was rather more substantial than most of the ground nests, though none were frail. It measured 3.50×1.75 inches in depth, and the same dimensions in diameter. It was composed of fine dead weed-stalks, strippings of dead weed bark and dead grasses, lined with the finest of same material, and with a few feathers worked into lining. The feathers in nest lining seem to be characteristic of this bird. A set of four eggs measure $.74 \times .55$, $.75 \times .55$, $.73 \times .55$; $.76 \times .54$, and the nest diameter outside $3\frac{1}{2}$ inches and inside 2 inches with a depth of $2\frac{1}{2}$ inches outside and 2 inches inside. Another set of four measure $.63 \times .50$, $.67 \times .52$, $.64 \times .52$, $.65 \times .50$, and the nest, diameter outside 3 inches, inside 1.75 inches, outside depth 1.75 inches, inside depth 1.75 inches. A set of five measure $.67 \times .52$, $.67 \times .52$, $.67 \times .52$, $.66 \times .52$, $.67 \times .52$, and the nest outside diameter 3 inches, inside 2 inches, outside depth 2.25 and inside depth 1.25 inches. The eggs show little variation, and have a creamy white ground well spotted and blotched with brownish and lavender markings.

The sitting Yellow Palm Warbler usually runs, mouse fashion, from the nest, while the intruder is still some feet distant, and it is with greatest difficulty and the most acute watching that this movement is detected soon enough to serve as a clue to the immediate whereabouts of the nest. The bird remains silent until well away from the nest, usually until the intruder has been in the vicinity for a few minutes, when it commonly begins a vigorous chipping, the sharp, strong note characteristic of the species. The song is described in Knight's 'Birds of Maine,' as a "characteristic whistled or warbled 'tsee, tsee, tsee, tsee, tsee, tsee,' or 'peacie, peacie, peacie, peacie, peacie;'" which is doubtless as good a description as the present authors could attempt. At any rate, those familiar with it find it easily recognizable.

Seiurus aurocapillus. OVENBIRD.—Apparently not common. A very few noted on each visit.

Seiurus noveboracensis noveboracensis. WATER THRUSH.—One noted June 25, 1915.

Seiurus motacilla. LOUISIANA WATER THRUSH.—A pair were observed feeding young on the wing, June 25, 1915. Notwithstanding the fact that the region is well north of the recognized range of this species, and of the further fact that no specimen was taken, the birds being carefully observed at close range and noted to possess the characteristics of this species, in addition to the immediate comparison with a specimen of *S. n. noveboracensis*, the authors feel convinced that the identity was correctly designated.

Geothlypis trichas trichas. MARYLAND YELLOW-THROAT.—A quite common breeder. Two nests, each containing four fresh eggs, were noted on June 15 and 23, respectively, 1916, and another with four well incubated eggs on June 25.

Wilsonia pusilla pusilla. WILSON'S WARBLER.—We first noted this bird on June 9, 1916, when two males and a female were observed in the bog where two nests of the Yellow Palm Warbler were found. The actions of these birds indicated that nesting might be under way. On June 16, a nest with five eggs, in which incubation was well commenced, was found in a boggy and quite wet clearing, surrounded by woods, with a considerable growth of small cedar, tamarack, spruce and balsam saplings. This nest was built in the side of a moss tussock, resting in the angle formed by the abrupt side of the tussock and a little cedar, at the base of which the nest was placed. It was composed of moss, dead leaves, fine weed stalks and grasses, a little hair being mingled with the lining of fine, dead grass. It measured 3.50×1.50 inches in depth and 3.50×1.75 inches in diameter. These eggs, ovate in shape, were white, profusely marked with spots, specks and blotches of rusty, reddish-brown, blotches of lighter shade, and fine specks of lavender, thickest about the larger end, where they formed well defined wreaths. They measured $.65 \times .47$, $.65 \times .48$, $.64 \times .47$, $.67 \times .49$, $.66 \times .47$.

On June 10, 1916, a female was observed building, and by watching from concealment, the nest site was located. The first material, consisting of fine reddish roots was just being placed in the cavity, which was carefully hidden within a thick tuft of dried grass along the edge of an old log, near to, but not really in boggy ground. On June 17 this nest was completed and contained one egg. In the very few moments that we were there the birds were not seen. On June 21 the nest contained four eggs, on which the female was sitting. These eggs were a different type from those described above, being quite round and heavily sprinkled with fine reddish-brown spots thickest near the larger end.

On June 19 another nest with four fresh eggs was found in a tussock in the same bog and within a few rods of the spot where the one found June 15 was located. June 21 another nest was located containing five well incubated eggs of the ovate type, which measured $.65 \times .50$, $.67 \times .47$, $.66 \times .48$, $.66 \times .47$, $.65 \times .46$. It was in the same general locality where the birds were first observed on the 9th, but was concealed in heavy grass cover, in a fairly flat spot, and in the midst of a dense tangle of coni-

fers and other brush. This nest would probably never have been located, but for the accident of the bird flushing right from our feet. The eggs of the two sets of four were very different in shape, being much rounder. A set measured .61 × .51, .61 × .51, .63 × .51, .63 × .50, and the nest measured, outside diameter 3.50 inches, inside diameter 2 × 1.50 inches, outside depth 2.50 inches, and inside 1.50. Another four measured .61 × .50, .62 × .50, .60 × .50, .62 × .50; and the nest, outside diameter 3 × 3.25, inside diameter 1.75, outside depth 2.50, inside depth 1.50; all in inches. These eggs were heavily spotted with reddish brown and cinnamon, and the coloring is such as to give a pinkish cast to the eggs even when blown. The nests are typical and readily distinguishable from other ground nesting warblers of the region, being very bulky for such a small bird.

In the case of the nest with five eggs, first found, the female continually returned to the nest with intruders close at hand, but others were rather more shy. The male was not noted about the site of occupied nests to any extent, in any instance.

The song is compared by Minot to that of the Redstart or Yellow Warbler; is given by Nuttall as "tsh-tshtsh-tshea" and by Goss as "zee-zee-zee-see-e," the latter being indorsed by Knight, who says, "with a rising inflection on the last e."

Wilsonia canadensis. CANADA WARBLER.—Common and doubtless breeds.

Setophaga ruticilla. REDSTART.—Fairly common. Breeds. A nest was found building on June 28, 1915, and another just completed July 1. Two nests found just completed on June 8, 1916, contained four eggs each on the 17th. These were in willows at a height of about eight feet, in the same locality as the Philadelphia Vireos, while the 1915 nests were in good sized yellow birches in partially cleared woods.

Nannus hiemalis hiemalis. WINTER WREN.—A few noted. A pair were feeding large young, which were beginning to fly on July 1, 1915. Two of these young birds were caught and banded.

Certhia familiaris americana. BROWN CREEPER.—A nest containing young about a week old, was found June 22, 1916, under loose bark on a dead stub in damp and fairly heavy woods. The bark on which the nest rested had started to break away, requiring repairs on our part to obviate danger of the young birds being prematurely deprived of a home.

Sitta canadensis. RED-BREASTED NUTHATCH.—Common. Breeds.

Penthestes atricapillus atricapillus. CHICKADEE.—Fairly common. A nest was found June 17, 1916, containing young. It was in a dead willow stub, only two and one half inches in diameter and five feet in height.

Penthestes hudsonicus littoralis. ACADIAN CHICKADEE.—Fairly common. One seen carrying nesting material, June 7, 1916. On the 20th, a nest with young was found, about a foot above the ground in a stump, and on the 23rd, in a similar situation, a nest just completed.

Regulus satrapa satrapa. GOLDEN-CROWNED KINGLET.—Very common. Breeds. June 26, 1915, a nest was found, hung in the fronds of

spruce branches close to the trunk, thirty feet up. It contained bits of egg shell, and appeared to have been broken up by some mammal.

Regulus calendula calendula. RUBY-CROWNED KINGLET.—Common, breeds.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.—Abundant breeding bird. Nests building, just completed or with eggs were found during the entire period of both visits, and with young after the middle of June.

Hylocichla guttata pallasi. HERMIT THRUSH.—Common. Breeds. Nests with four eggs each, incubation nearly complete, were found June 18, 1915, and June 11, 1916, and a nest with three fresh eggs, June 24, 1916.

Planesticus migratorius migratorius. ROBIN.—Abundant breeding bird, nests being found everywhere, even out in fairly dense second growth woods. One nest contained young nearly ready to leave it on June 21; another held three nearly fresh eggs, June 24.

Sialia sialis sialis. BLUEBIRD.—A very few seen. A nest containing young and one addled egg was found on June 9, 1916.

MISS LAWSON'S RECOLLECTIONS OF ORNITHOLOGISTS.

BY FRANK L. BURNS.

IN a batch of papers relating to the life of Alexander Wilson loaned me by the late Frederick B. McKechnie, I found an interesting series of letters running from June 21, 1879, to February 20, 1883, signed by Malvina Lawson. The matter which appeared most valuable was copied verbatim but owing to my friend's desire to publish, it was scarcely drawn upon for my papers on Wilson. Mr. McKechnie's sad death occurred before he was able to carry out his intention and the original letters having been lost or destroyed, it seems desirable to publish my extracts. Miss Lawson was the eldest daughter of Alexander Lawson, who was born in Ravenstruthers, Scotland, December 19, 1773; came to Philadelphia in May, 1792, and died there August 22, 1846. He is described as a tall thin man of large frame and athletic; full of animation, good feeling and the love of truth, but inclined to be satirical. Miss Lawson says: "My father has been represented as

speaking broad Scotch which is simply ridiculous, I never heard him use a Scottish word except in jest or in reading his favorite Scottish poets."

He engraved plates for the 'American Ornithology' of Alexander Wilson and Charles Lucien Bonaparte; George Ord's unpublished work on mammals; the 'Monograph of the Fresh-Water Univalve Mollusca' of Prof. Samuel S. Haldeman and the 'Terrestrial and Air-Breathing Mollusks' of Dr. Amos Binney, beside various illustrations on botany, chemistry and mineralogy.

There were eight children, five of whom reached maturity: Malvina, Helen E., Catherine, Oscar A. and Mary, all inheriting the artistic talents of their parent. Malvina and Helen colored by hand most of the plates of Ord's edition of Wilson's 'Ornithology' and whatever superiority it possesses is entirely due to the skill of the girl artists. It is said that with the beautiful preparations from the Philadelphia Museum for models, they labored steadily at this work for three years and received five thousand dollars, at that time an almost unheard of sum for two young girls to earn.

Helen, perhaps the most versatile of the sisters, executed the drawings for the works on conchology by Prof. Haldeman and Dr. Binney, and also engraved the life-sized figure of the Rice Bunting used in Harrison Hall's prospectus of Wilson's 'Ornithology.' Oscar was born in Philadelphia, August 7, 1813; learned engraving under his father; was employed by the U. S. Coast Survey at Washington from 1841 to 1851, and died in Philadelphia, September 6, 1854.

The surviving sisters, Miss Malvina and Mrs. Mary L. Birkhead, removed to West Chester, Pa., in 1872, where the former died on April 6, 1884. Mr. R. P. Sharples of West Chester, to whom I am indebted for much information, was well acquainted with the sisters and recognized them as ladies of great refinement and culture. Among the family treasures was a handsome oil painting by Miss Malvina of her three sisters and a sketch book containing the work of all members of the family. Miss Lawson was born about 1806; she possessed a strong personality, a vigorous mind and was most loyal to her friends; yet it is to be feared that certain unfortunate events resulting in the loss of long cherished family treasures, somewhat embittered her later days. Mrs. Birkhead,

who was twenty years younger, survived her sister but a short time and the family is now without a living representative.

Miss Lawson writes of her father's distinguished visitors with an artist's love of detail and all the frankness of an impressionable child. How well she recalls a little act of kindness by good old William Bartram, and her description of the personal appearance of Alexander Wilson ought to set to rest the talk of his absolute poverty and especially that of his "fingers stiffened by toil and manual labor." It has been said that Wilson owed little to his engraver, but it is shown here that he sometimes made only an outline drawing leaving Lawson to fill in the details directly from the specimen; and this must be true since drawings of this nature are still in existence.

Miss Lawson's analysis of the character of George Ord can scarcely be excelled. Ord, admirable in many ways, was insantly intolerant of any opposition and was the instigator of the persecution of John J. Audubon by Waterton and others. The only pleasing feature of this attack is the refusal of "Good Charles" Bonaparte to allow his judgment to be swayed by the prejudice of his friends. But we shall let Miss Lawson tell of these things in her own way. Of Bartram she writes, "When a child I saw Mr. Bartram. He was a very charming old gentleman and he gave me a very double yellow rose, a great rarity at that time, and every summer we made more than one excursion to the garden."

"The article on the death of [Governor Meriwether] Lewis," she writes, "recalled to my mind hearing my father speak of him as being one of the most proud and sensitive of human beings. The neglect of the Government to ratify the arrangements he had made in good faith, seemed to madden him. He was rather small and dark, in strong contrast to Clark his companion. My father engraved the new Antelope they discovered, and the Horned Sheep of the Rocky Mountains. They certainly were the first animals (mammals) fit to be looked at that were ever engraved in this country." The Wilson matter follows:

"I do not feel certain whether the profile likeness (of Wilson) drawn by Barralet, was taken before or after death. My father said it did not do him justice although it gave some idea of him. Barralet had been a teacher of drawing in England and Ireland,

and you see he knew something of engraving as he copied his own work in stipple which was fashionable in that day. He certainly took a good profile, as the one he made of father proves."

"Wilson was very particular on the subject of the linen he wore, and the white cravat and ruffles were as important to him as a fine ladies' dress is to her. I am certain of all I say on this matter, not from my own memory but from the discussions I have constantly heard all my youth on the habits and manners of a man whose work has rendered him famous. My father received numberless visitors from all parts of the world, and particularly Scotland; who desired to learn everything concerning him. He might have been a little careless, but nothing eccentric; his dress was that of other gentlemen of the period. Wilson was almost a pure type of the bilious temperament, which you are aware is one best fitted for constant exertion, either mental or physical. He could bear great fatigue without flinching. His height was five feet and eleven inches. When preparing for one of his expeditions he was in the habit of taking a walk every morning, increasing the distance daily and when he could make twenty miles without much fatigue, he started on his journey."

"Some twaddle speaks of his bony hands knotted and hardened by labor, struggling to paint birds! In the first place Wilson never painted birds, he drew them in water colors, and more frequently in outline, either with pencil or pen, and my father finished them from the birds themselves. I have heard my mother speak of his hands as being small and delicate, and there was nothing in his occupation to particularly injure his hands; as I mentioned before, he wrote beautifully and played charmingly on the flute."

"I think I mentioned the drawing of Wilson's school house my sister Helen had made when quite a young girl, many years before Mr. Weaver's; it has the old trees around it and is very picturesque. Mr. Eastwick who purchased Bartram's garden, saw it and pronounced it excellent and indeed historical."

"The tomb which covers the remains of Wilson was erected by the lady he was to have married, Miss Sarah Miller, sister of the Hon. Daniel Miller, Member of Congress from the upper section of the City. The Swedes' church now occupies an obscure portion of Philadelphia, but at that time it was open to the Delaware and

nearly in the country, so that the old Lutheran pastor could see his apple orchard from his pulpit. Many years ago, a gentleman much interested in Wilson, was anxious to have his remains transferred to Laurel Hill Cemetery, a beautiful and picturesque place on the banks of the Schuylkill; he consulted my father who saw no objection but on applying to Mr. Ord, who was the sole surviving executor, he positively refused to permit the removal."

"Rider, the artist who undertook the coloring of Wilson's first edition, was a Swiss painter in oils; he understood water colors however, but to facilitate his work, spoiled a great many copies by using opaque colors both in Wilson's and afterwards in Bonaparte's works. Of course none of this trouble was felt in the same way by Bonaparte, although he complains bitterly of Rider."

George Ord, Wilson's biographer and editor of the latter volumes of his work Miss Lawson knew personally. Of him she writes:

"Mr. Ord was a very singular person, very excitable, almost of pure nervous temperament. Proud, shy and reserved toward strangers; but expansive and brilliant with his friends; an elegant belles-lettres scholar and when he chose, shone in conversation. In his moral character and his business relations he was one of the most upright of men. He had many excellent qualities, was a strong partizan and was charming in conversation when it pleased him to be so. He had much of the nervous grace of a woman when he spoke on literary or sentimental subjects. I remember my father laughing heartily when I was about nine years old; I said I thought Mr. Ord conversed like a woman, and being asked why I thought so, I said: because he could show off all his knowledge to the best advantage. He particularly detested children and the fear of intruding on him accompanied me all his life. He would get in a temper of rage at times. Father, who valued his good qualities, never very steadily opposed him; but my mother had many arguments with him. I have seen him snatch up his hat and rush out of the house, declaring he would never enter again, and the next Sunday he would walk in to tea as usual as if nothing had happened. He took tea at our house every Sunday for years. He was very much respected but not very much loved. He would often speak very rudely to gentlemen, and more than once father was consulted as to whether Mr. Ord should receive a challenge for what he said, but father was always a peacemaker."

"Toward the close of his life he did some queer things. He must have destroyed the likeness of himself that his son painted and also the plates that my father engraved for his proposed work on animals (quadrupeds); nothing of the kind was found among his effects and not a line of the descriptions I know he had written. He dropped this work on a reverse of fortune; having lost heavily in railroads. Had the work been continued it would have been an honor to the country. There are only two works that would have approached it: Scotts' Dogs and Churchs' Horses. There were only four plates engraved. Mr. Ord allowed the Academy of Natural Sciences to print a limited number of copies from the plates of the Rat and Ground Hog, I think about 100 impressions. I have only one copy of the frontispiece, a group of the smaller Quadrupeds, Weasel &c. drawn by Le Sueur, a French artist, and very prettily engraved. I wish I could send you entirely finished copies, but the Ground Hog is the only one that is so. The Elk and the Florida Rat are not finished, as you will observe on the impressions of the Rat that my father has written 'unfinished.' In the Ord letter edited by Dr. Coues, he mentions presenting impressions to Leach of the British Museum. Mr. Ord often expressed a determination that no one should profit by these engravings and no one has done so. To his other oddities he added the last whim of leaving all he died possessed of, about \$40,000. to the Penn. Hospital for the Insane, although he had nephews and nieces in very limited circumstances. Toward the close of his life he shut himself out entirely from the world, living with his books. He had lost most of his old friends and made no new ones."

"Charles Bonaparte," writes Miss Lawson, "married one of his cousins (Zenaide) a daughter of Joseph, ex-king of Spain. She accompanied her husband several times to our house. Her sister Charlette, Joseph's youngest daughter, was quite an artist. While she lived with her father at Bordentown, she took several views on the Delaware. Mr. Ord accompanied her on some of these occasions and said that he had never seen such a rapid pencil. She afterward engraved all the drawings she took here, on stone, and Charles Bonaparte gave father impressions of her work. She married a cousin, I think a son of Jerome, who also was an

artist and etched very spiritedly on copper. Charles sent this with some of his sister-in-law's drawings from Florence."

"I do not know whether you ever saw any uncolored impressions of Bonaparte's work? Every one said it was a pity they should ever be colored. The Condor in particular is wonderful and so are some of the Geese."

"I do not know the commencement of the strife, but the advent of the Prince of Munsigno set the whole Academy [at Philadelphia] by the ears. He appeared to make warm friends and equally warm enemies. He would come to father and tell him in high glee of the last *war-whoop* and its effect, laughing heartily. For a time he seemed to take a sort of boyish delight in setting them all by the ears, but he grew tired of the fuss and I think it was one reason of his return to Europe."

"I only caught a glimpse of Mr. Waterton when he called on father; he was the darkest white man I ever saw. He left a bird set up in the style he had invented, for father to examine. It was the most perfect thing I ever saw, not a feather was rumped. It was hollow and the shape of the bird carefully preserved. Father did not think it would last long and I believe this was the case."

"I have no doubt Mr. Ord does not spare Audubon, I have heard him expatiate too frequently on that subject not to be fully aware of his bitter scorn and contempt. I saw Audubon when Bonaparte brought him to see father. He looked like the backwoodsmen that visit the city. His hair hung on his shoulders and his neck was open."

"Ord wrote Lawson from Paris, dated Mar. 14, 1830: 'You make some pretty tart remarks upon the work of that imposture Audubon, who has endeavored to keep the public curiosity alive for a long time. Your criticisms are just and men of intelligence will be obliged to acknowledge them. If one of your uncommon experience be not a complete judge of these matters; then in the name of common sense who is judge? You tell me that a certain Professor of Botany declared that the drawings of the plants are excellent. Now I have the pleasure of conversing when in London with two botanists quite as well known as Soloman C., one was the illustrious Robert Brown, they both asserted that the Botany of Audubon's plates was good for nothing. What is the fellow doing in America? He surely cannot be in want of matter, for

what he carried to Europe would suffice for a long time. Did he expect to procure subscribers? If so he surely made a mistake. I hope I. C. will prevail with the Library com. to subscribe for a copy; otherwise I fear that when one wants to examine the Elephant with a view of studying its character, one will not know where to find it.'

"Another letter written by Ord about 1838, from the home of Waterton, Walton Hall, Wakefield, Eng.: 'By the way, some of Waterton's essays would amuse you vastly; he gives some terrible thrusts at Audubon. Lizars of Edinburgh, Audubon's first engraver, was here a few days ago; if I had room I would tell you what he said of the great ornithologist whose reputation is sadly on the wane.'

"Here is an extract from a letter of Charles Lucien Bonaparte in reply to one from Lawson: 'Rome, July 2, 1836. As to Audubon, although his work is not faultless; be sure you under rate him a little too much. There is some merit in some of his plates, that of the Goldfinch appears to me very superior. I am sorry to hear that he had such a bad reception in the U. S. I have got him several subscribers. I cannot take your wicked commission to Temminck for I have scolded him severely for not subscribing to the work at my recommendations. Some of Audubon's plates are superior to Temminck's, who vilifies them. As to Audubon's new species, I shall never rely on that; slight variations do not make new species.'

"The only acquaintance I had with Nuttall," writes Miss Lawson, "was when I colored his plates in his continuation of Michaux's work on the trees of America. You know the drawing and coloring of the original Michaux were exquisite. Nuttall had his coloring made up from other works, especially from Michaux. Nuttall himself was the least attractive of the Genus Homo I ever met. I could never imagine any Englishman so dirty and disorderly in his dress and appearance. I suppose he was a good botanist. I have heard young men who studied with him, speak of him with great respect as a teacher, but I thought his manners rough and abrupt."

In a five page reference to Dr. Coues' criticism of some of her father's work, Miss Lawson writes: "Never again will such engraving be seen! The day of fine work of that kind is over; and except one or two English works on natural history, nothing has approached it."

THE STATUS OF THE BLACK-THROATED LOON (*GAVIA ARCTICA*) AS A NORTH AMERICAN BIRD.

BY F. SEYMOUR HERSEY.

IN collecting and tabulating data for use in the distributional portion of Mr. A. C. Bent's work on the Life-Histories of North American Birds, the published material on the Black-throated Loon was found to be unsatisfactory,—the records of various observers being frequently indefinite or in many cases not based on actual specimens secured. The earlier writers gave the species a rather wide range in North America, which has been gradually restricted until in the present A. O. U. Check-List it is stated to breed only in the Kotzebue Sound region of Alaska, and from Cumberland Sound south to Ungava, while some half dozen scattering localities in the United States are said to have been visited casually in winter.

It was finally decided to verify, so far as possible, all North American records and requests for data were sent to all who were in a position to give authentic information concerning any of the various records or the specimens on which they were based. The results of this correspondence proved no less interesting than surprising.

Mr. Bent has very generously placed all this data in the hands of the writer. He has also examined and measured the specimens of this species and *Gavia pacifica* in the collections of the U. S. National Museum, the Museum of Comparative Zoölogy (including the Bangs collection) and the private collection of Mr. William Brewster. Mr. W. DeW. Miller of the American Museum of Natural History and Mr. P. A. Taverner of the Geological Survey of Canada have measured the birds in the collections of those institutions and Dr. Louis B. Bishop has sent notes and measurements from the specimens in his collection. I have tabulated below, by locality, the various records and the results of our investigations.

Alaska: It was formerly supposed that the Black-throated Loon ranged along the whole Bering Sea coast of Alaska. There

are two specimens in the National Museum collection (No. 64303, St. George Id., Pribilofs, June 22, and No. 76004, St. Michael, taken by Nelson) and one in the collection of Mr. Brewster (No. 48760, Nome, August 20, 1905). All other Alaskan specimens that we have examined are *pacifica*. The breeding of the species in Kotzebue Sound appears to rest on the records of Grinnell (Pacific Coast Avifauna, No. 1) of two sets of eggs taken in 1899. Dr. Grinnell writes under date of April 11, 1916, "In my Kotzebue report it is my impression that I simply followed the custom of preceding naturalists in the region (Nelson, et al) and used the name *arctica* on no other ground." He also states, "There are no birds in any of our collections, from the Kowak region of Alaska, but I think it is justifiable to suppose that they are the same, namely *pacifica*."

Hudson Bay Region: In the 'Ornithological Results of the Canadian 'Neptune' Expedition to Hudson Bay and Northward,' 1903-1904, Eifrig records (Auk, XXII, p. 234) both birds and eggs taken at Southampton Island by A. P. Low and that they were breeding abundantly. Mr. Taverner writes, "I have Low's Hudson Bay birds and I can see absolutely no difference between them and the Pacific. In fact, of some thirty birds taken from Southampton Island all along the Arctic Coast and B[ritish] C[olumbia] I can make but one form."

Cumberland Sound Region: Kumlien's record (Bull. 15, U. S. Nat. Mus.) is apparently our only authority for this region. While he states a bird was shot June 24, this specimen is not now in the National Museum and no others appear to have been taken.

Ungava: I do not know on what authority this loon has been attributed to Ungava. Turner in his list of Labrador birds (Proc. U. S. Nat. Mus., 1885), based principally on his observations in Ungava, mentions only Stearns' record and this record refers to the Labrador coast and not to this locality. Mr. W. E. Clyde Todd found birds paired and evidently breeding on the east coast of James Bay but all were *pacifica*. Mr. J. H. Fleming writes that all birds from James Bay that he has seen were Pacific Loons.

Labrador: Audubon mentions (Birds of America) that he saw a few pairs while in Labrador, but apparently none were secured. He does not state where the specimens were obtained from which

his drawings were made but probably they were European birds. R. Bell records (Rep. Prog. Geol. Surv. Canada) male, female and young shot on Nottingham Island, Hudson Strait, August 28, 1884. If these birds were preserved they are not now in the museum at Ottawa. Mr. J. H. Fleming states that birds from Hudson Strait in his collection are *pacifica*. Mr. W. A. Stearns mentions (Notes on the Nat. Hist. of Labrador) two specimens shot by one of the French priests at Bersimis but does not indicate what finally became of them or if either was preserved. Dr. Charles W. Townsend informs us he does not know of any Labrador specimen of this species in any collection.

It appears that some form of Black-throated Loon occasionally occurs on the Labrador coast but until a specimen is secured and compared with specimens of *pacifica* it seems best to consider all records as more or less questionable.

Greenland: As *Gavia arctica* occurs in Iceland, it seems probable that it may occasionally be found in southern Greenland but there does not appear to be any trustworthy record. Mr. J. H. Fleming writes that he has specimens from the Carey Islands north of Baffin Bay and they are Pacific Loons.

Quebec: All records for this province that I have seen refer to Labrador.

New Brunswick: Baird, Brewer and Ridgway (Water Birds, Vol. 2) mention a single specimen taken at Point Lepreau, in the Bay of Fundy. This is the same as the record in the 'Proc. Bost. Soc. of Nat. Hist.,' Vol. 17. It is very indefinite and no further information is given. Herrick's statement (Bull. Essex Inst., Vol. 5) that this species "occurs in winter" at Grand Manan is not verified by more recent observers or substantiated by specimens.

Maine: A bird taken at Cutler, Maine, in December, 1881, is said to be in the possession of Mr. Newell Eddy of Bay City, Michigan. Knight says (Birds of Maine) that its correct identification has been "shown to be unquestionable." As so many specimens supposed to be correctly identified have proved to be something very different, it seems desirable that this bird be reexamined.

I am informed by Mr. Norman A. Wood that Mr. Eddy has recently passed away and it is not possible, at this time, to examine the birds in his collection.

Massachusetts: There is no authentic record for this State although young birds supposed to be Black-throated Loons have been occasionally recorded. The records are not allowed by Howe and Allen (*Birds of Massachusetts*).

Connecticut: Sage and Bishop (*Birds of Connecticut*) do not list this species in their book. It has been given by early writers, undoubtedly in error.

New York: A full plumaged adult male was shot April 29, 1893, on Long Island and was recorded by Mr. William Dutcher in 'The Auk', Vol. 10, p. 265. This record is the only one for New York that is based on an actual specimen and it has been very generally quoted. The bird is now in the American Museum of Natural History and Mr. W. DeW. Miller, who has recently critically examined and measured it, writes that it "is unquestionably *G. pacifica*."

South Carolina: Audubon is the only authority for the occurrence of the Black-throated Loon in this State. It has not since been observed. Wayne (*Birds of South Carolina*) states, "Audubon was unquestionably mistaken in the identification of the bird shot."

Texas: Audubon also recorded this species from Texas. Baird, Brewer and Ridgway discredit the record which is, with little doubt, an error.

Ontario: It is supposed that this loon has occurred several times in Ontario. Mr. J. H. Fleming has looked up several records from this region and says that, so far, he has "found no record that will bear investigation." Also, "if any Black-throated Loons occur in the Great Lakes they will be *pacifica*."

Ohio: There are also several supposed occurrences of this species in Ohio. Prof. Lynds Jones, writing in regard to these records, says, "Dr. Wheaton mentions the capture of one specimen, but on hearsay evidence. I had several reports of specimens captured by trustworthy persons, but I cannot vouch for them personally. A specimen was sent to me two years ago from Painesville, purported to be a Black-throated, but I did not make it out such, and so sent it to Oberholser, who pronounced it a Red-throated."

Illinois: Mr. Ridgway writes regarding including this loon in the avifauna of Illinois, that "it was based on purely 'general

considerations only' at a time when probably no one doubted the occurrence of that species in North America and that it was not based on a specimen. We were, unfortunately, not so particular about such things in the earlier days."

Wisconsin: It is supposed that the Black-throated Loon has been taken three times in Wisconsin. Kumlien and Hollister refer to these records (Birds of Wisconsin) very briefly. One is said to have been taken at Milwaukee and to be in the Public Museum of that city. Mr. Henry L. Ward, director of that institution, writes under date of February 8, 1917, "I have been trying to run down the reported Black-throated Loon contained in this museum, but can find no trace of it at all. The specimen is evidently not contained in any of our series of mounted birds, nor in the series of bird-skins." Another bird, taken at Racine, is reported to be in the collection of Dr. Hoy and a bird said to have been shot in 1860 on Rock River, near Janesville, in the collection of a gentleman from Rockford, Illinois. Mr. Hollister says of these records (letter February 20, 1917), the Rock River record "is from the notes of Thure Kumlien and considering the date and circumstances I should not accept it as a real record to-day." He further says, "I have been over the Hoy collection very carefully and do not remember seeing the specimen recorded from his collection, but as the Hoy collection was left without any labels whatever (except the *name* of the bird) and his records were not to be found, that record would be far from satisfactory." He concludes, "At any rate, I am prepared to drop the bird from the Wisconsin list."

Michigan: It was once supposed that this species occurred in Michigan but the latest authority on the birds of that State, Prof. W. B. Barrows (Michigan Bird Life) does not accept any of these records. He says, "We have been unable to find a Michigan specimen in any collection, and have been equally unsuccessful in finding an unquestionable record of its occurrence. Until something more definite can be shown it seems best to exclude it from the regular list."

Minnesota: Dr. P. L. Hatch (Notes on the Birds of Minnesota) lists this species on the strength of supposed specimens seen between 1858 and 1869. No birds were secured.

Iowa: Dr. R. M. Anderson records (Proc. Davenport Acad. Sci., Vol. XI) three specimens of this loon from Iowa. One was, at that time, in the collection of the State University at Iowa City (No. 10175). Regarding this bird Prof. Dayton Stoner writes, "I am sorry to report that I am unable to find any specimen of *Gavia arctica* in our collections." The two remaining records are of birds reported by Mr. H. J. Giddings. One of these is said to have been identified by Dr. C. Hart Merriam and is still in Mr. Giddings' possession. Dr. Merriam has written us that he does not now recall this bird but a memorandum he has, which was made in connection with the examination of this specimen, states that all United States records are *pacifica*. Mr. Giddings states in a recent letter that the bill of this bird measures 2.15 inches from which it seems evident that it is a Pacific Loon.

In a recent letter Dr. Anderson says, "I have no doubt personally that either *Gavia arctica* or *Gavia pacifica* occurs occasionally as stragglers or accidentally in Iowa. From what I have learned in the last few years, however, I am inclined to think the bird would be *pacifica*."

Nebraska: Regarding supposed records from this State Prof. Myron H. Swenk writes (January 27, 1917), "I think you will find that all of the several records of this species depend back on the record published in the 'Birds of Nebraska (1904)' from Curtis, Nebraska, in the Rees Heaton collection. This bird is in immature plumage and resembles in size and the broad edgings of the back feathers immature specimens of the black-throated loon, but a careful study I made of it a couple of years ago convinced me that it was really referable to the common loon. Fortunately, a little later Mr. H. C. Oberholser was visiting me at Lincoln and examined this specimen carefully, with the result that he pronounced it the common loon. We have accordingly stricken the black-throated loon from the Nebraska list, since this was the only specimen even supposed to be that species which has been taken in the state."

Colorado: All definite records from this State are from the vicinity of Colorado Springs. C. E. Aiken reported five birds taken, although apparently but one was preserved. This bird is in the Aiken collection at the Colorado College. Mr. Edward R. Warren

informs us this bird was sent to Prof. W. W. Cooke in 1915, and "he reported it to be an immature Common Loon." He also says, "Aiken told me that other Loons have been taken in this vicinity and were like this bird."

Washington: Mr. Samuel N. Rhoads recorded (Proc. Acad. Nat. Sci. of Phila., 1893, p. 29) a female secured and others seen at Nisqually during April, 1892. This bird is now in the Academy of Natural Sciences and has been recently examined by Dr. Witmer Stone, who says, "I am confident that this specimen is only *immer*. It is very much worn and is 'made up' small. The bill is smaller than some specimens of *immer* but matched by others and is much larger than any *pacifica*." Dawson and Bowles (Birds of Washington) refer to another specimen, in the collection of the State Normal School at Bellingham, taken by J. M. Edson. Mr. Edson informs us that "this is clearly an error. I have never succeeded in securing a specimen of the Black-throated Loon. I think the statement was intended to apply to the Red-throated Loon."

British Columbia: According to Fannin this species has been taken at Burrard Inlet and at Dease Lake, Cassiar, B. C. I have not been able to obtain any further information concerning these records.¹

Conclusion: From the above it appears that there is not a single North American specimen of the Black-throated Loon in any collection in this country or Canada, with the exception of the three Alaskan birds. Every record that is based on a specimen proves to refer to some species other than *arctica* when the specimen is carefully examined. In view of this fact, we cannot place much value on the records that cannot be verified at the present time. The three Alaskan specimens, when compared with available material from Siberia and northern Europe, prove to be the Asiatic form, *Gavia arctica suschkini* Sarudny, and not *Gavia arctica arctica* (Linnaeus). If this Asiatic subspecies is accepted as distinct from the European bird, it is this form that should appear on our Check-List and *Gavia arctica arctica* should be dropped until such time as a North American specimen is procured and, by careful comparison

¹ Since the above was written I have examined the two British Columbia birds. One is clearly a Pacific Loon. The other is most like Siberian specimens and may be a straggler from that country. It is *not* the European form of *arctica*.

with European birds, proved to be of that form. If, however, we do not recognize *Gavia arctica suschkini* as distinct, then the European bird is entitled to a place in our avifauna only on the strength of its casual occurrence in Alaska.

AN IMPROVED OBSERVATION TENT.

BY R. M. STRONG.

Plate X.

IN a preceding number¹ of this journal, I described with an illustration, a tent which I had used in studying gulls at their breeding places. This tent was a modification of a type described by Sawyer.² It is inexpensive and free from certain objectionable features of other bird blinds. However, it is small and low. Being only four feet high, one is not able to stand erect in it, and there is not sufficient space to handle apparatus comfortably. In the same communication, I stated that I had devised and used a larger tent since doing the work there described. It has occurred to me that an account of the improvements might be useful to some readers of this journal.

Tents of this type have no stay lines to interrupt the camera view, and they can be set up on rocky sites where it is not practicable to drive tent stakes. Furthermore, they are of very convenient shape, and are economical of ground space.

The contour of the tent is maintained by a frame which gives a flat horizontal roof and steep, slightly-sloping sides. The frame consists of eight poles held in position by four socket pieces at the corners of the roof and four anchoring poles to be described later. In the older tent, the frame poles were held together by blocks of

¹ Strong, R. M. On the Habits and Behavior of the Herring Gull, *Larus argentatus* Pont. The Auk, Vol. XXXI, Nos. 1-2, January-April, 1914. Plates III-X and XIX-XX, 1 text figure.

² Sawyer, E. J. A Special Bird-Blind. Bird Lore, Vol. XI, no. 2, March-April, 1909, pp. 71-73. One page of text figures.



1. CORNER BRACKET OF BRASS TUBING.
2. TENT IN POSITION, MUSKEGET ISLAND, AUG. 7, 1913.

wood in which holes were bored on three sides for the end, side, and upright poles. It has been my experience that these blocks are very unsatisfactory. Wear and shrinkage at the sockets make the fitting insecure, and a very small amount of looseness allows a large amount of sagging of the whole tent to leeward in a breeze. Furthermore, the blocks must be relatively large and clumsy to stand the strain put upon them, and they make a smooth fit of the cloth impossible. I found it necessary to brace the leeward side with sticks or boards which of course interfere seriously with the view and are often blown down by a strong wind.

I have been unable to get satisfactory poles for the tent frame in the vicinity of the places where I have used the tents. Furthermore, it requires more time to prepare poles properly than I have wished to spare after reaching a place for work. Since my first day in the field with a tent, I have always taken poles with me carefully prepared in advance.

In place of the clumsy wooden blocks, I had some brass corner pieces constructed. These consist of three short tubes brazed together (see Fig. 1), and lacquered black. These tubes have an inside diameter of 22 mm., and each is about 70 mm. long. One of these receives the end roof pole, another a side roof pole, and the third an upright supporting pole. The roof poles each make an angle of 103 degrees with the upright supporting pole. The angle of the two horizontal poles is of course 90 degrees. In place of the heavy hardwood, I have substituted bamboo poles. These are prepared from ordinary bamboo fish poles, selecting portions of suitable diameter. Brass ferrules were fitted on the ends of each roof pole and on the upper ends of each upright pole. These are necessary for a firm joint and were prepared at a hardware shop. A portion of such a ferrule projecting from a socket, appears in Fig. 1, at the right.

The tent proper was made from the same material used in my smaller tent, i. e. dark-green cambric or lining cloth which was purchased at 6 cts. a yard. About thirty yards 26 inches wide were used. I cut the cloth, pinning the sections together for the seamstress. The roof is in one section, which spreads slightly over the sides and ends of the tent. The angles were determined on cross section paper, and the material was cut into strips, three

to each side. The strips were sewed together with the seams parallel to the ground as may be seen in Fig. 2. When complete, the tent made a huge four cornered sack with two sides not sewed together half way from the bottom to the roof in order to provide an entrance, (see Fig. 2).

All of the seams were sewed twice, and the edges of all openings were hemmed. Tapes were sewed to the edges of the entrance for closing it. A deep hem was made at the bottom to hold bamboo anchoring poles which also served to hold the cloth in position. Openings were made in convenient positions for observation and camera work as may be seen in Fig. 2. These are closed by cloth doors which are fastened on the inside by hooks and eyes of the largest size. There is also an opening about six inches square, in the roof near one end, for ventilation. The whole outfit is packed into a long narrow box of suitable size and strength for transportation.

When the tent is to be set up, a site is chosen carefully with relation to the position of the sun at various times of the day, the direction of the wind, and of course the material to be studied. The roof poles are first inserted in the corner sockets and then the uprights. After the frame is properly erected, the tent is slipped over it. A certain amount of latitude in locating the lower ends of the upright poles is permitted, and they are spread until the cloth is taut. The bottom anchoring poles are inserted and are anchored at their protruding ends with stakes or with rocks where stakes cannot be used. I have often used drift wood on a beach, instead of rocks.

After all outside work is done, I go inside with my equipment, *i. e.* cameras, etc., and arrange the interior. Even though a strong wind may not occur at the time, one may arise before the day's work is done, and it is wise to be prepared for a possible heavy strain upon the light tent frame, so reinforcing lines are arranged. Strong twine (shade cloth is good) must be used, and three lines are kept permanently tied to each corner piece. These lines are stretched under tension diagonally to screw eyes on the upright poles, so that they lie close to the cloth and do not cross any observation openings. One runs diagonally across the roof to the opposite corner piece. If the tension of all the lines is sufficient,

they help greatly in holding the tent in shape during a strong wind. In a stiff breeze, there is considerable bellying of the cloth on the windward side, but with so much space inside this is not serious.

The tent is six and one half feet high which accommodates most men in the erect position even with a hat. It is five and one half feet wide and seven feet long, at the ground. The four upright poles are six feet, eight inches long. The two end bottom poles are six feet long and the side bottom poles eight feet. The end roof poles are two feet six inches long, and the side roof poles are four feet long.

The usual method of entering the tent with a companion who may emerge at once and go away with any boat or vehicle used in transportation is always followed. I have never known this procedure to fail to deceive birds. They show vastly less concern than when there is no companion to leave the tent and the vicinity.

It is possible to see a good deal through the tent cloth without being visible from outside, and one may look through the openings rather freely without being noticed by birds. For a more complete discussion of the behavior of birds about a tent, and for various details in its use, the reader is referred to my paper on the behavior of the Herring Gull.

Professor Reighard of the University of Michigan spent two days with me in this tent during July, 1913, and he appears standing beside it in Fig. 2. This picture was made at Muskeget Island off the Massachusetts coast. We were comfortable and had abundant space for work. He has made some improvements in the line of portability which he has kindly described for me to publish with this account. The corner pieces are of aluminum and are made extra strong. The longer poles are provided with brass socket and ferrule joints so that no pole piece is over four feet long. He writes that "the whole outfit is compact and can be carried in a canvas bag with a handle like a valise."

FIELD NOTES ON THE SERIEMA (*CHUNGA BURMEISTERI*).

BY HOWARTH S. BOYLE.

ON October 21, 1914, Mr. Leo E. Miller and the writer left New York for South America on an extended collecting and exploring trip of two years. Collections were made in various parts of Colombia, Bolivia and the Argentine. It was in the sandy wastes of the latter country that the Seriema was found and its habits observed.

Lavalle, 1800 feet, our collecting station, was about seven hours by train south of Tucuman, the capital of the Argentine state of that name.

The soil, for the most part, is very dry and affords little opportunity for cultivation. Thorn bushes and stunted trees form the main growth which, in some places, is really very dense and all but impregnable. Water is scarce, though there are several small, artificial ponds used mostly by cattle. The railroad furnishes water to the few inhabitants once or twice daily.

Desert-like as it seemed, with its cactus, heat and dust, Lavalle proved to be an exceedingly interesting locality for collecting. Mammals were very abundant. Viscachas were so numerous as to be a pest; their huge and scattered runways were to be seen on all sides; living with them, in apparent harmony, were rabbits, foxes, skunks, cavies, owls, and boa constrictors.

It was in this type of country that we found this queer, long-legged runner, *Chunga burmeisteri*, or chuña, as the natives call it. Being unique, not only in its classification, but in appearance as well, this species as it skipped along a dusty trail only to disappear into the dense, brush patches at the slightest sign of danger, gave us at once not only an admiration for its beauty and grace, but a desire to know more concerning its secretive habits. The call-notes were a series of cries and yelps which were given in chorus; that is, one individual would start his queer, turkey-like yelps, while other birds joined in until four or five would be chanting at the same time. The volume of sound would then diminish and

the song end abruptly. We rarely saw more than one individual at a time. Apparently they move continuously, running away at the slightest sound; yet the word run can hardly be used in this connection, as there is no visible motion of the body, just a graceful glide, at once both swift and deceiving.

During the early evening is the best time to view them as they seem to frequent the larger and more open of the numerous cow-paths at this hour. They show great fondness for horses and cattle; benefiting, no doubt, by the insects which they disturb. On several occasions we had ample opportunity to observe solitary specimens which were kept by the natives as pets. It was most interesting to watch them feed. On giving one individual the body of a large bird, it attempted to swallow the meat whole, but without success; it then proceeded to tear the flesh by placing it under foot and using its bill, but even this failed; finally, taking the body firmly in its beak the bird ran a few paces, then reared to full height and brought the meat to the earth with considerable force; this was repeated until the entire amount was consumed. During the whole performance the head and neck feathers were raised and lowered in apparent anger.

The same individual was seen to perform what was either a dance or a fight. Nervously jerking its tail and uttering a short *cluck*, the bird ran forward with lowered head at a small tree. Suddenly stopping, it struck at the tree with both feet; this was repeated a number of times in rapid succession, and with great excitement. Then just as abruptly as it had started, the bird stopped, raced around the yard and returned once more to renew its queer antics.

In preparing the skins of our specimens, several interesting observations were made. There is, of course, no visible crop; the gizzard was exceedingly large and usually contained a varied assortment of food which, perhaps owing to the lack of water, was rather dry, and easily examined.

The gizzards of four specimens showed little or no variation; hard beetles, both large and small, together with large locusts, formed the greater portion of insect diet; green leaves and grasses with a small quantity of hard seeds made up the vegetable food; while in one specimen an entire rat, or young cavie, was found.

It might be interesting to note that we observed but few locusts in the field, perhaps proving that the Chuñas made special effort to secure them. I imagine that the examination of a large series of gizzard contents would reveal a great variety of food stuff.

The tame birds greedily ate the bodies of birds and rats, while one individual consumed small tacks and broken china without embarrassment. Of special interest perhaps was the finding of the double ovary in two of the specimens, while another female had but the usual single ovary.

It is difficult to estimate just how numerous these birds are. There is one section of the "Gran Chaco" of northeastern Argentina that is called "Campo de las Chuñas" where the natives go each year to secure the eggs of this bird for eating purposes. We believe these to be the same species as *Chunga burmeisteri*; the red-legged variety is said to live in the uplands and on the mountain slopes.

The flesh of this bird is very much esteemed by the natives, who, after carefully boiling the meat, make it into a stew and serve with potatoes, rice, raisins and a quantity of spice which forms quite a palatable dish and, after the usual diet of very young goat or kid, is a most welcome change.

THIRTY-TWO YEARS OF BIRD MIGRATION AT RALEIGH, NORTH CAROLINA.

BY C. S. BRIMLEY.

In the spring of 1885, I first began to fill out migration schedules for the U. S. Biological Survey, and have kept up the habit every succeeding spring since, except in 1902, in which year I made observations, but lost my records, and the little data I have for that spring comes from the dates of a few skins which I collected then. The share others have had in the work is indicated at the end of Table I.

Not only have "arrivals" in spring been noted, but the "lasts"

of winter visitors also, though to a less extent. The fall migration has been taken note of as well, and quite full records have been made both of arrivals and "lasts" at that season from 1885 to 1894, and in 1907 and 1908, while considerable though less abundant observations have been made in nine other years.

I can generalize but little from my observations, the most positive deduction being that a wet spring is liable to be characterized by a comparative abundance of sandpipers and swallows. The weather also, particularly the prevailing temperature during the previous few weeks, has a great effect in hastening or delaying the arrival of the late March migrants, and to a lesser extent the arrival of those reaching us in April. Thus the year 1915, was unusually cold in March and early April, and the early migrants were unusually late, while the opposite was the case with the year 1890.

In making up the average dates for "first seen" and "last seen," abnormally early and later dates have been excluded, as well as those in a species must certainly have been here for some time before it was actually observed. As however, a bird cannot be observed until it is actually present, while it may be overlooked even though here, the average dates of "first seen" are undoubtedly to some extent later than the actual average date of arrival of the species, while the average dates of last seen are of course somewhat earlier, than the actual average dates of departure of the different species.

In all 165 species are included in the following tables, which are, I hope, self explanatory.

I. *Number of species observed in each year of observation.*

Year	Spring Migration			Autumn Migration		
	Arrivals	Lasts	Total	Arrivals	Lasts	Total
1885	59	21	80	36	22	58
1886	59	0	59	46	33	79
1887	67	20	87	44	42	86
1888	69	7	76	41	38	79
1889	65	8	73	37	31	68
1890	54	23	77	32	22	54
1891	59	1	60	33	30	63
1892	61	18	79	25	34	59
1893	53	23	76	50	39	89

Year	Spring Migration		Total	Autumn Migration		
	Arrivals	Lasts		Arrivals	Lasts	Total
1894	61	13	74	29	21	50
1895	42	27	69	31	1	32
1896	50	0	50	1	0	1
1897	50	0	50	5	0	5
1898	57	2	59	24	2	26
1899	39	0	39	15	1	69
1900	58	6	64	5	4	1
1901	41	0	41	—	—	—
1902	17	2	19	—	—	—
1903	35	0	35	—	—	—
1904	34	1	35	—	—	—
1905	28	2	30	15	0	15
1906	33	14	47	11	0	11
1907	54	16	70	17	19	36
1908	49	0	49	24	28	52
1909	55	18	73	—	—	—
1910	11	0	11	—	—	—
1911	45	13	58	11	2	13
1912	52	13	65	—	—	—
1913	12	0	12	—	—	—
1914	35	6	41	3	0	3
1915	68	18	86	6	2	8
1916	56	19	75	(not included)		

The preceding table contains the number of species observed in each year by my brother H. H. Brimley and myself up to about 1892, and from that time to 1916 by myself alone in most years, except that in the spring migration, Mr. S. C. Bruner's records constitute the greater part of the data for "arrivals" in 1908, 1912 and 1915, and more or less of the data for the same in 1907, 1911, and 1913, while he also gave me some autumn records in 1908. Mr. Z. P. Metcalf assisted me very considerably in the spring of 1911, and he and his assistants at the A. and M. College contributed about one half the data for the spring of 1916. Mr. Franklin Sherman and my brother have also contributed much data from time to time.

The autumn data, and the "lasts" of winter birds are almost exclusively my own, or in the earlier years mine and my brother's, but Mr. Bruner furnished a number of interesting "lasts" for the spring of 1915.

II. SUMMER VISITORS.

Note. The number of years in which the species has been observed in the spring and autumn is given in parentheses in those columns. The numbers following the average dates, indicate the number of years on which the average is based.

Name of Species	First Noted in Spring		Last Noted in Autumn	
	Earliest Date	Average	Average	Latest Date
Least Bittern	May 3,'89(3)	May 3(3)	.....	Sept. 11,'88(3)
Little Blue Heron (a)	June 21,'94(8)	July 8(7)	Aug. 15(4)	Aug. 21,'93(4)
Green Heron	Mch. 29,'93(22)	Apr. 9(21)	Sept. 3(9)	Oct. 2,'94(9)
King Rail (b)	.....	Mch. 28(7)	.....	Nov. 17,'92(3)
Spotted Sandpiper	Apr. 3,'93(26)	Apr. 14(18)	.....	Sept. 14,'86(4)
Broad-winged Hawk	Apr. 4,'98(6)	Apr. 8(4)	.....	Aug. 26,'89(1)
Yellow-billed Cuckoo	Apr. 26,'90(21)	May 5(21)	Oct. 7(9)	Oct. 17,'87(9)
Black-billed Cuckoo	Apr. 30,'00(4)	May 2(3)	Sept. 27(3)	Oct. 10,'91(4)
Chuck-wills-widow	Apr. 10,'90(7)	Apr. 22(7)	.....	Sept. 21,'03(10)
Whip-poor-will (c)	Mch. 31,'16(13)	Apr. 11(13)	Sept. 24(8)	Nov. 6,'94(8)
Nighthawk	Apr. 15,'87(9)	Apr. 27(5)	Sept. 26(9)	Oct. 6,'86(12)
Chimney Swift (d)	Apr. 3,'14(29)	Apr. 15(26)	Sept. 7(10)	Oct. 14,'15(10)
Ruby-throated Hummingbird	Apr. 10,'95(27)	Apr. 17(25)	Sept. 15(11)	Oct. 7,'07(11)
Kingbird	Apr. 12,'15(27)	Apr. 20(25)	Aug. 28(9)	Sept. 18,'93(9)
Crested Flycatcher	Apr. 9,'88&'08(29)	Apr. 18(28)	Sept. 17(9)	Sept. 28,'93(12)
Wood Pewee	Apr. 18,'10&'16(30)	Apr. 25(29)	Oct. 6(10)	Oct. 13,' 1(12)
Acadian Flycatcher	Apr. 20,'94(25)	Apr. 29(23)	Sept. 7(7)	Sept. 11,'88(9)
Orchard Oriole	Apr. 16,'88(30)	Apr. 25(30)	Aug. 6(10)	Aug. 22,'93(10)
Grasshopper Sparrow	Mch. 25,'97(18)	Apr. 19(10)	.....	Oct. 22,' 93(3)
Chipping Sparrow (e)	Feb. 23,'12(16)	Mch. 8(16)	Oct. 31(4)	Nov. 25,'88(4)
Bachman's Sparrow	Mch. 19,'87(11)	Apr. 5(7)	.....	Sept. 20,'01(1)
Blue Grosbeak	Apr. 25,'88&'16(24)	May 3(24)	Sept. 12(10)	Sept. 27,'87(10)
Indigo Bunting	Apr. 19,'12(27)	May 2(27)	Oct. 7(8)	Oct. 19,'07(9)
Summer Tanager	Apr. 6,'88(29)	Apr. 19(29)	Sept. 7(10)	Sept. 30,'86(11)
Purple Martin (f)	Apr. 8,'12(19)	Apr. 16(11)	Aug. 16(8)	Sept. 9,'97(8)
Rough-winged Swallow	Mch. 28,'08(26)	Apr. 6(18)	July 3(8)	July 17,'86&'08(8)
Red-eyed Vireo	Apr. 6,'88(30)	Apr. 17(30)	Oct. 9(8)	Oct. 16,'07(11)
Yellow-throated Vireo	Apr. 3,'88(32)	Apr. 14(32)	Sept. 1(10)	Sept. 16,'91(10)
Blue-headed Vireo (g)	Mch. 18,'90(23)	Mch. 28(20)	Oct. 28(12)	Nov. 15,'86(12)
White-eyed Vireo (h)	Mch. 24,'99(32)	Apr. 2(29)	Sept. 25(12)	Oct. 16,'07(12)
Black and White Warbler (i)	Mch. 19,'94(29)	Mch. 28(27)	Oct. 8(8)	Oct. 13,'86&'91(9)
Prothonotary Warbler	Apr. 18,'87(4)	Apr. 21(4)	Aug. 19(3)	Aug. 25,'87&'90(4)
Worm-eating Warbler	Apr. 19,'85&'87(14)	Apr. 24(11)	Sept. 2(9)	Sept. 20,'93(9)
Parula Warbler	Apr. 1,'89(26)	Apr. 10(20)	Oct. 9(10)	Oct. 14,'90(12)
Yellow Warbler (j)	Apr. 5,'88(31)	Apr. 17(30)	Aug. 26(6)	Sept. 20,'01(6)
Yellow-throated Warbler	Mch. 13,'90(30)	Mch. 26(29)	Sept. 12(9)	Sept. 20,'01(12)
Prairie Warbler	Apr. 6,'93(29)	Apr. 15(29)	Sept. 4(10)	Sept. 20,'01(11)
Ovenbird (k)	Apr. 7,'92(30)	Apr. 17(27)	Oct. 12(9)	Oct. 23,'85(13)
Louisiana Water-Thrush (l)	Mch. 14,'08(28)	Mch. 29(23)	July 25(8)	Aug. 4,'88(8)
Kentucky Warbler (m)	Apr. 18,'10&'16(17)	Apr. 30(17)	Aug. 29(9)	Oct. 13,'98(9)
Maryland Yellow-throat (n)	Mch. 20,'94(30)	Mch. 28(30)	Oct. 13(8)	Oct. 24,'93(12)
Yellow-breasted Chat	Apr. 18,'88(29)	Apr. 25(29)	Aug. 8(8)	Sept. 13,'01(8)
Hooded Warbler	Apr. 6,'12(28)	Apr. 17(26)	Sept. 13 (8)	Oct. 1,'91(12)
Redstart	Apr. 4,'92(31)	Apr. 12(27)	Oct. 3(12)	Oct. 13,'86&'91(12)
Catbird (o)	Apr. 13,'16(31)	Apr. 20(30)	Oct. 17(11)	Nov. 17,'11(11)
Blue-gray Gnatcatcher	Mch. 16,'94(32)	Mch. 28(31)	Sept. 18(11)	Oct. 2,'86&'89(11)
Wood Thrush	Apr. 10,'93(30)	Apr. 18(30)	Oct. 1(10)	Oct. 16,'85(10)

Notes on preceding table of summer visitors.

- (a). Little Blue Heron is a post breeding summer visitor.
- (b). King Rail has been recorded on January 23, 1890, February 29, 1896, March 9, 1905, March 17, 1888, March 23, 1897 and March 30, 1896, so that although we are certain it is only a straggler in winter, we cannot tell which date should go on record as the earliest date of a summer bird.
- (c). The next latest date for Whip-poor-will is October 10, 1885. Excluding the extra late date of November 6, 1894, the average latest is September 19.
- (d). The first dates for Chimney Swifts fall into three groups, the first centering on April 6 (7 yrs.), the next on April 13 (9 yrs.), the last on April 22 (10 yrs.). The breeding birds come on the latter date.
- (e). Chipping Sparrow once taken on December 29, 1890.
- (f). Purple Martin once seen on March 16, 1907.
- (g). Blue-headed Vireo on December 15, 1885, and January 3, 1891.
- (h). White-eyed Vireo on March 3, 1890.
- (i). Black and White Warbler once also on November 10, 1885.
- (j). Yellow Warbler only occasional after August.
- (k). A probably more nearly correct date for the arrival of the Ovenbird is obtained by taking the average of the 19 years giving earliest dates, which gives us April 13 for the average date of arrival.
- (l). I have a single record of the Louisiana Water-Thrush for August 22, 1888, but it was "seen" and not taken, and I think was probably a Water-Thrush.
- (m). Next latest for Kentucky Warbler, September 12, 1894.
- (n). Maryland Yellow-throat also observed on December 6, 1889, January 8, 1891, January 30, February 4, 1890, and February 7, 1889.
- (o). Catbird also seen on January 4, and February 17, 1887, and January 8 and 12, 1910.

III. TRANSIENTS.

Note. The letters "S" and "A" after the name of the species stand for spring and autumn respectively, the numbers after these letters are the number of years the species has been observed in these seasons, the numbers after the averages, the number of years on which the averages are in each case based.

Name of Species	First Seen		Last Seen	
	Earliest Date	Average	Average	Latest Date
Pied-billed Grebe, S(4)	Mch. 15,'99	.....	.....	Apr. 20,'09
" " A(2)	Aug. 7,'08	.....	.....	Sept. 30,'08
Loon, S(1)	Apr. 13,'97 only	.....	.....	.....
" A(2)	Nov. 17,'87	.....	.....	Dec. 9,'96
Black Tern, S(2)	Apr. 18,'07	.....	.....	May 10,'98
" " A(3)	July 28,'84	.....	.....	Sept. 23,'92
Blue-winged Teal, S(5)	Mch. 23,'88	.....	.....	May 6,'89
" " A(2)	Oct. 19,'88	.....	.....	Dec. 7,'93
Bittern (a), S(15)	Mch. 19,'08	Mch. 31(8)	.....	May 30,'93
Virginia Rail S(5)	Mch. 7,'91	Apr. 10(3)	May 3(3)	May 9,'00
" " A(2)	Sept. 8,'96	.....	.....	Oct. 9,'93
Sora Rail, S(10)	Apr. 8,'86	Apr. 22(8)	May 11(4)	May 13,'88&'89
" " A(6)	Aug. 21,'94	Aug. 29(3)	Oct. 13(5)	Oct. 17,'96
Coot, S(4)	Apr. 6,'98	.....	.....	May 16,'84
" A(5)	Oct. 28,'14	Nov. 5(4)	.....	Dec. 1,'82
Pectoral Sandpiper, S(8)	Mch. 22,'93	Mch. 27(5)	Apr. 8(5)	Apr. 15,'15
" " A(1)	Nov. 15,'94 only	.....	.....	.....
White-rumped Sandpiper, S(1)	May 22,'09	.....	.....	May 24,'09
Least Sandpiper, S(5)	Apr. 30,'85	May 2(2)	May 20(5)	May 24,'09
Semipalmated Sandpiper S(1)	May 22,'09 only	.....	.....	.....
Greater Yellow-legs, S(10)	Mch. 22,'93	Apr. 3(8)	May 8(4)	May 29,'88
Yellowlegs, S(10)	Mch. 25,'93	Apr. 3(5)	Apr. 30(4)	May 18,'88
Solitary Sandpiper, S(25)	Apr. 4,'89	Apr. 22(13)	May 17 (12)	May 25,'94
" " A(8)	July 14,'94	July 25(4)	Oct. 6(3)	Oct. 10,'93
Bartramian Sandpiper, S(9)	Mch. 28,'96	Apr. 6(6)	Apr. 24(4)	Apr. 30,'87
Semipalmated Plover, S(2)	May 5,'84	.....	.....	May 22,'09
Pigeon Hawk, S(3)	Apr. 19,'92	.....	.....	Apr. 29,'16
" " A(3)	Sept. 2,'10	.....	.....	Oct. 4,'14
Osprey, S(15)	Mch. 18,'11	Mch. 29(13)	Apr. 20(9)	May 6,'91
" A(1)	Aug. 25,'87 only	.....	.....	.....
Alder Flycatcher, S(1)	May 14,'92	.....	.....	May 16,'92
" " A(2)	Aug. 27,'98	.....	.....	Sept. 21,'93
Bobolink, S(24)	Apr. 19,'88	May 2(24)	May 23(5)	May 27,'87
" A(14)	Aug. 15,'93	Aug. 29(11)	Sept. 29(7)	Oct. 7,'96
Baltimore Oriole, S(3)	Apr. 26,'90	.....	.....	May 4,'15
" " A(3)	Aug. 31,'89	.....	.....	Sept. 17,'86
Rusty Blackbird, S(17)	Feb. 15,'90	Mch. 2(10)	Apr. 17(6)	Apr. 26,'87
" " A(12)	Oct. 17,'92	Oct. 28(8)	Nov. 17(8)	Dec. 16,'89
Bronzed Grackle, S(2)	Feb. 26,'95	.....	.....	Mch. 3,'93
" " A(6)	Nov. 5,'95	.....	.....	Dec. 11,'95
Henslow's Sparrow, S(7)	Mch. 18,'88	.....	.....	May 3,'01
Leconte's Sparrow, S(1)	Apr. 21,'94 only	.....	.....	.....
White-crowned Sparrow, S(1)	Apr. 14,'12 only	.....	.....	.....

Name of Species	First Seen		Last Seen	
	Earliest Date	Average	Average	Latest Date
Rose-breasted Grosbeak, S(7)	Apr. 22,'09	Apr. 27(4)	May 6(5)	May 8,'85&'97
Scarlet Tanager, S(20)	Apr. 19,'11	Apr. 30(20)	May 11(6)	May 14,'01
" " A(5)	Sept. 11,'86	Sept. 18(3)	Oct. 8(3)	Oct. 14,'91
Barn Swallow, S(22)	Apr. 2,'88	Apr. 10(13)	May 15(10)	May 25,'99
" " A(10)	Aug. 6,'99&'08	Aug. 9(10)	Aug. 30(9)	Sept. 16,'86
Cliff Swallow S(5)	Apr. 20,'11	.....	.....	May 9,'91
Tree Swallow S(16)	Mch. 12,'87	Apr. 4(12)	May 16(5)	May 30,'86
" " A(1)	Sept. 7,'88	.....	.....	Oct. 13,'88
Bank Swallow, S(1)	Apr. 24,'88 only	.....	.....	.....
" " A(1)	Aug. 8,'94 only	.....	.....	.....
Blue-winged Warbler, S(3)	Apr. 26,'12	.....	.....	May 6,'07
" " A(3)	Aug. 20,'08	Aug. 22(3)	Aug. 29(3)	Sept. 4,'88
Brewster's Warbler, A(1)	Sept. 6,'88 only	.....	.....	.....
Golden-winged Warbler, S(2)	May 7,'89&'91 only	.....	.....	.....
" " A(2)	Aug. 26,'86	.....	.....	Aug. 30,'93
Tennessee Warbler, A(3)	Sept. 19,'89	.....	.....	Oct. 12,'87&'88
Cape May Warbler (b), S(5)	Apr. 7,'92	Apr. 30(3)	May 7(4)	May 9,'92&'11
" " A(1)	Nov. 1,'11 only	.....	.....	.....
Black-throated Blue Warbler (c) S(25)	Apr. 6,'88	Apr. 26(25)	May 13(22)	May 19,'88&'09
Black-throated Blue Warbler (c) A(7)	Sept. 20,'93	Sept. 30(5)	Oct. 18(4)	Nov. 19,'86
Magnolia Warbler, S(4)	May 10,'89	.....	.....	May 15,'93
" " A(7)	Sept. 11,'89	Sept. 13(3)	Oct. 14(4)	Oct. 20,'90
Cerulean Warbler, S(1)	May 8,'93 only	.....	.....	.....
" " A(2)	Aug. 29,'89	.....	.....	Sept. 16,'87
Chestnut-sided Warbler, S(5)	Apr. 27,'86	.....	.....	May 15,'90
" " A(8)	Aug. 17,'91	Aug. 24(4)	Oct. 2(6)	Oct. 12,'91
Bay-breasted Warbler, S(1)	May 5,'15 only	.....	.....	.....
Black-poll Warbler, (d) S(22)	Apr. 16,'16	May 2(15)	May 26(9)	May 31,'92
" " A(10)	Sept. 24,'88	Oct. 2(8)	Oct. 21(9)	Nov. 5,'86
Blackburnian Warbler (c), A(7)	Aug. 25,'87	Aug. 31(3)	Oct. 3(7)	Oct. 13,'91
Black-throated Green Warbler, S(13)	Mch. 22,'96&'97	Mch. 28(10)	.....	May 11,'94
Black-throated Green Warbler, A(7)	Sept. 7,'91	Sept. 19(4)	Oct. 8(5)	Oct. 16,'93
Water-Thrush, S(17)	Apr. 18,'93	Apr. 27(15)	May 20(10)	May 28,'87
" " A(15)	July 25,'95	Aug. 3(7)	Sept. 29(9)	Oct. 6,'94
Connecticut Warbler, A(3)	Oct. 13,'98	.....	.....	Oct. 24,'96
Wilson's Warbler, S(4)	May 11,'93	.....	.....	May 19,'15
Canadian Warbler S(2)	May 13,'92	.....	.....	May 18,'12
House Wren (f) S(18)	Apr. 10,'93	Apr. 20(16)	Apr. 30(9)	May 4,'85
" " A(10)	Sept. 21,'08	Sept. 25(5)	Oct. 11(5)	Oct. 16,'88
Short-billed Marsh Wren, S(1)	May 4,'92 only	.....	.....	.....
" " A(2)	Aug. 10,'94	.....	.....	Sept. 20,'93
Long-billed Marsh Wren(g), S(10)	Apr. 21,'92	Apr. 26(5)	May 5(6)	May 7,'05
" " A(3)	Sept. 20,'92	Sept. 22(3)	.....	Oct. 19,'92
Wilson's Thrush, S(15)	Apr. 23,'85	Apr. 29(9)	May 8(5)	May 9,'85, '91, '92
" " A(6)	Aug. 28,'88	Sept. 1(4)	Sept. 14(3)	Sept. 18,'90
Gray-cheeked Thrush, S(8)	May 4,'94	May 6(3)	May 16(5)	May 24,'92
" " A(4)	Oct. 2,'88	.....	.....	Oct. 12,'88
Bicknell's Thrush, S(3)	May 3,'94	.....	.....	May 18,'89
" " A(2)	Sept. 24,'87	.....	.....	Oct. 12,'87
Olive-backed Thrush, S(13)	Apr. 22,'92	Apr. 29(8)	May 12(6)	May 17,'93
" " A(4)	Sept. 26,'87	Oct. 3(3)	Oct. 16(3)	Oct. 21,'85

Notes on preceding Table.

- (a). Bittern once on December 7, 1886.
- (b). Except for the one taken on April 7, 1892, all the dates for Cape May Warbler fall on or after April 27.
- (c). The earliest date April 6, 1888, is abnormally early for Black-throated Blue Warbler. Next earliest is April 14 of same year, and the next April 17, 1894.
- (d). Next earliest date for Black-poll Warbler is April 26, 1912.
- (e). In 1906 the Blackburnian Warbler was taken in the adjoining county of Durham on May 3, and October 24, by Ernest Seeman.
- (f). I have an extra early date of April 1, 1887, for House Wren, but the bird was seen, not taken, and now think it was a mistake.
- (g). Long-billed Marsh Wren also on January 14, 30, 1890, March 13, 18, 1889, and March 17, 1888.

IV. WINTER VISITORS.

The numbers after the dates have the same meaning as in the case of Summer Visitors.

Name of Species	First Seen		Last Seen	
	Earliest Date	Average	Average	Latest Date
Hooded Merganser	Nov. 4,'88(1)	.....	.....	Jan. 31,'08(1)
Mallard	Nov. 6,'85, '95(6)	Nov. 10(5)	Mch. 31(5)	Apr. 7,'85(5)
Black Duck	Dec. 1,'94(1)	.....	Apr. 6(3)	Apr. 11,'95(5)
Baldpate	Nov. 12,'91(1)	.....	.....	Apr. 26,'92(1)
Green-winged Teal	Dec. 1,'88(2)	.....	.....	Apr. 13,'00(4)
Lesser Scaup Duck	.....	.....	.....	Mch. 28,'08(3)
Wilson's Snipe (a)	Sept. 20,'03(10)	Oct. 26(9)	Apr. 18(14)	Apr. 28,'98(17)
Marsh Hawk	Aug. 15,'96(11)	Sept. 12(5)	Apr. 15(7)	Apr. 29,'87(7)
Long-eared Owl	Dec. 11,'93(2)	Dec. 13(2)	Feb. 22(2)	Feb. 24,'10(3)
Short-eared Owl	Nov. 8,'87(8)	Nov. 23(6)	Jan. 18(4)	Feb. 9,'10(4)
Saw-whet Owl	Dec. 4,'97(3)	.....	.....	Dec. 18,'94
Yellow-bellied Sapsucker	Sept. 27,'87(15)	Oct. 10(12)	Apr. 14(7)	Apr. 29,'87(12)
Horned Lark	Dec. 7,'86(1)	.....	.....	Feb. 20,'95(2)
Prairie Horned Lark	Dec. 7,'86(1)	.....	.....	Feb. 20,'95(2)
Cowbird (b)	Sept. 4,'90(10)	Oct. 17(5)	Apr. 3(9)	Apr. 29,'90(9)
Meadowlark (c)	Aug. 8,'87(18)	Oct. 7(10)	Apr. 20(7)	Apr. 29,'87(10)
Purple Grackle (d)	Oct. 26,'93(12)	Nov. 1(11)	Apr. 15(7)	May 8,'86(13)
Purple Finch	Oct. 28,'89(10)	Nov. 4(10)	Apr. 17(8)	Apr. 30,'90(11)
Pine Siskin	Nov. 3,'86(6)	Nov. 21(6)	May 2(4)	May 11,'11(6)
Lapland Longspur	Jan. 13,'93(2)	.....	.....	Feb. 20,'95
Vesper Sparrow (e)	Oct. 11,'93(12)	Oct. 20(12)	Apr. 12(9)	Apr. 19,'07(13)
Savannah Sparrow	Sept. 16,'87(13)	Oct. 11(13)	May 6(8)	May 13,'16(17)

Name of Species	First Seen		Last Seen	
	Earliest Date	Average	Average	Latest Date
White-throated Sparrow	Oct. 4,'88(19)	Oct. 16(19)	May 12(9)	May 19,'15(15)
Slate-colored Junco	Oct. 23,'86(15)	Oct. 31(15)	Apr. 12(13)	Apr. 24,'07(14)
Song Sparrow (f)	Oct. 2,'91(18)	Oct. 13(18)	Apr. 4(14)	Apr. 28,'15(14)
Swamp Sparrow	Oct. 10,'88(13)	Oct. 21(11)	May 11(11)	May 19,'93(15)
Fox Sparrow (g)	Oct. 17,'93(12)	Nov. 15(11)	Mch. 15(9)	Apr. 6,'15(9)
Towhee (h)	Oct. 4,'89(13)	Oct. 11(12)	Apr. 30(16)	May 10,'11(16)
Migrant Shrike (i)	Aug. 18,'88 (21)	Sept. 3(14)	Mch. 25(4)	Apr. 1,'15(7)
Myrtle Warbler	Oct. 11,'86(15)	Oct. 17(13)	May 4(17)	May 18,'93(18)
Yellow Palm Warbler (j)	Sept. 16,'86(12)	Oct. 7(8)	Apr. 19(12)	May 1,'93(18)
Pipit (k)	Oct. 17,'87(6)	Oct. 24(6)	Mch. 22(6)	Apr. 6,'15(6)
Bewick's Wren	Sept. 24,'05(9)	Oct. 18(7)	.....	Apr. 3,'09(1)
Winter Wren	Sept. 26,'87(17)	Oct. 11(13)	Apr. 14(11)	Apr. 23,'90(13)
Brown Creeper	Oct. 3,'88(13)	Oct. 10(10)	Apr. 10(12)	Apr. 19,'15(14)
Red-breasted Nuthatch	Sept. 13,'86(10)	Oct. 7(9)	Mch. 30(4)	Apr. 10,'97(4)
Gold-crowned Kinglet	Oct. 7,'89(14)	Oct. 15(13)	Apr. 5(8)	Apr. 19,'07(8)
Ruby-crowned Kinglet (l)	Oct. 1,'88(20)	Oct. 16(19)	Apr. 20(18)	May 10,'10(18)
Hermit Thrush	Oct. 16,'88(14)	Oct. 21(11)	Apr. 18(19)	Apr. 29,'92(20)

Notes on preceding Table.

- (a). Wilson's Snipe is mainly a spring migrant.
- (b). Cowbird is commonest in spring migration and has been scarcer of late years.
- (c). Meadowlark has been observed June 1, 1913, at Morrisville this county and at Raleigh, June 4, 1916, so is presumably a scarce breeder in this vicinity.
- (d). Purple Grackle also taken on June 16, 1891. It is commonest during the migrations.
- (e). Vesper Sparrow also recorded by me on May 11, 1893, but now think I made a mistake in the identification.
- (f). Second latest date for Song Sparrow is April 11, 1890.
- (g). Second earliest date for Fox Sparrow is November 3, 1886.
- (h). Towhee is commonest in migrations.
- (i). Migrant Shrike is commonest in autumn, scarcest in spring. I have an old record of May 6, 1887, but now think it was a case of mistaken identity.
- (j). Yellow Palm Warbler is rare and irregular in winter. March 31 is the average of nine years of late March and early April dates and may indicate average arrival of transients.
- (k). Pipit also recorded for May 5, 1887, but think it a case of mistaken identity.
- (l). Next latest date for Ruby-crowned Kinglet is April 28, 1887.

V. STRAGGLERS AND SPECIES OF UNCERTAIN STATUS.

Horned Grebe. January 14, 1909, one taken.

Sooty Tern. July 1, 1909, one male taken.

White Pelican. May 12, 1884, one taken.

Baldpate. November 12, 1891, April 26, 1892.

Shoveller. March 31, 1902, a pair seen.

Bufflehead. December 16, 1893, a female taken.

Oldsquaw. January 14, 1910, one taken.

Wood Ibis, July 4, 1884, one taken.

Egret. July 15, 1884, one taken.

Black-crowned Night Heron. April 6, 1915, one taken, April 9, 1916, one seen.

Yellow-crowned Night Heron. June 25 and July 14, 1894, two immature birds taken. April 4, 1911, four adults seen. April 2, 8, 16, 1915, seen.

Black Rail. Two taken June 8, 1892. Eggs taken on eight different occasions, in six different years between 1889 and 1902, and on dates ranging from May 27 in 1889 to July 12, in 1894.

Purple Gallinule. One seen June 3, 1887, one taken three days later.

Florida Gallinule. April 20, 1907, one brought alive to S. C. Bruner. May 30, 1916, one brought alive to myself.

Dowitcher. July 29, 1884, one taken.

Ruff. May 6, 1892, female taken.

Passenger Pigeon. April 18, 1891, one seen.

Barn Owl. January 17, 1896, January 5, 1900, specimens taken.

Bald Eagle. August 24, 1893, adult seen.

Red-cockaded Woodpecker. April 22, 1890, April 16, 1897, April 20, 28, 1898, also taken at least once in winter by Bruner.

Crossbill. March 11, 23, 1885, June 5, 1887, January 16, 26, February 8, 1897, May 9, 1907. Specimen taken on the last date by Bruner, and others on the other dates by myself.

White-winged Crossbill. Three taken by Bruner on February 23, 1907.

Bachman's Warbler. April 27, and May 22, 1891, two males taken.

VI. SPRING TRANSIENTS AND SUMMER VISITORS.

Arranged in order of their average date of arrival (first seen).)

- March 2. Rusty Blackbird.
 8. Chipping Sparrow.
 26. Yellow-throated Warbler.
 27. Pectoral Sandpiper.
 28. King Rail, Blue-headed Vireo, Black and White Warbler, Black-throated Green Warbler, Maryland Yellow-throat, Blue-gray Gnatcatcher.
 29. Osprey, Louisiana Water-Thrush.
 31. Bittern.
- April 2. White-eyed Vireo.
 3. Yellow-legs, Greater Yellow-legs.
 4. Tree Swallow.
 5. Bachman's Sparrow.
 6. Rough-winged Swallow, Bartramian Sandpiper.
 8. Broad-winged Hawk.
 9. Green Heron.
 10. Barn Swallow, Parula Warbler, Virginia Rail.
 11. Whip-poor-will.
 12. Redstart.
 14. Yellow-throated Vireo, Spotted Sandpiper.
 15. Chimney Swift, Prairie Warbler, Purple Martin.
 16. Ruby-throated Hummingbird, Red-eyed Vireo, Yellow Warbler, Ovenbird, Hooded Warbler.
 18. Crested Flycatcher, Wood Thrush.
 19. Grasshopper Sparrow, Summer Tanager.
 20. House Wren, Kingbird, Prothonotary Warbler, Catbird.
 22. Chuck-wills-widow, Sora, Solitary Sandpiper.
 24. Worm-eating Warbler.
 25. Wood Pewee, Orchard Oriole, Yellow-breasted Chat.
 26. Long-billed Marsh Wren, Black-throated Blue Warbler.
 27. Rose-breasted Grosbeak, Water Thrush.

- 29. Acadian Flycatcher, Olive-backed Thrush, Wilson's Thrush.
- 30. Scarlet Tanager, Cape May Warbler, Kentucky Warbler.
- May 2. Least Sandpiper, Bobolink, Indigo Bunting, Black-poll Warbler, Black-billed Cuckoo.
- 3. Blue Grosbeak.
- 5. Yellow-billed Cuckoo, Least Bittern.
- 6. Gray-cheeked Thrush.

VII. AUTUMN TRANSIENTS AND WINTER VISITORS.

Arranged in order of average arrival (first seen).

- July 25. Solitary Sandpiper.
- August 3. Water-Thrush.
- 9. Barn Swallow.
- 22. Blue-winged Warbler.
- 24. Chestnut-sided Warbler.
- 25. Blackburnian Warbler.
- 29. Sora, Bobolink.
- September 1. Wilson's Thrush.
- 3. Migrant Shrike.
- 12. Marsh Hawk.
- 13. Magnolia Warbler.
- 18. Scarlet Tanager.
- 19. Black-throated Green Warbler.
- 22. Long-billed Marsh Wren.
- 25. House Wren.
- 30. Black-throated Blue Warbler.
- October 2. Black-poll Warbler.
- 3. Olive-backed Thrush.
- 7. Meadowlark, Red-breasted Nuthatch, Yellow Palm Warbler.
- 10. Brown Creeper, Yellow-bellied Sapsucker.
- 11. Savannah Sparrow, Towhee, Winter Wren.
- 13. Song Sparrow.
- 15. Gold-crowned Kinglet.

- October 16. White-throated Sparrow, Ruby-crowned Kinglet.
17. Cowbird, Myrtle Warbler.
18. Bewick's Wren.
20. Vesper Sparrow.
21. Swamp Sparrow.
24. Pipit.
26. Wilson's Snipe.
28. Rusty Blackbird.
31. Slate-colored Junco.
- November 2. Purple Grackle.
4. Purple Finch.
10. Mallard.
15. Fox Sparrow.
21. Pine Siskin.
23. Short-eared Owl.
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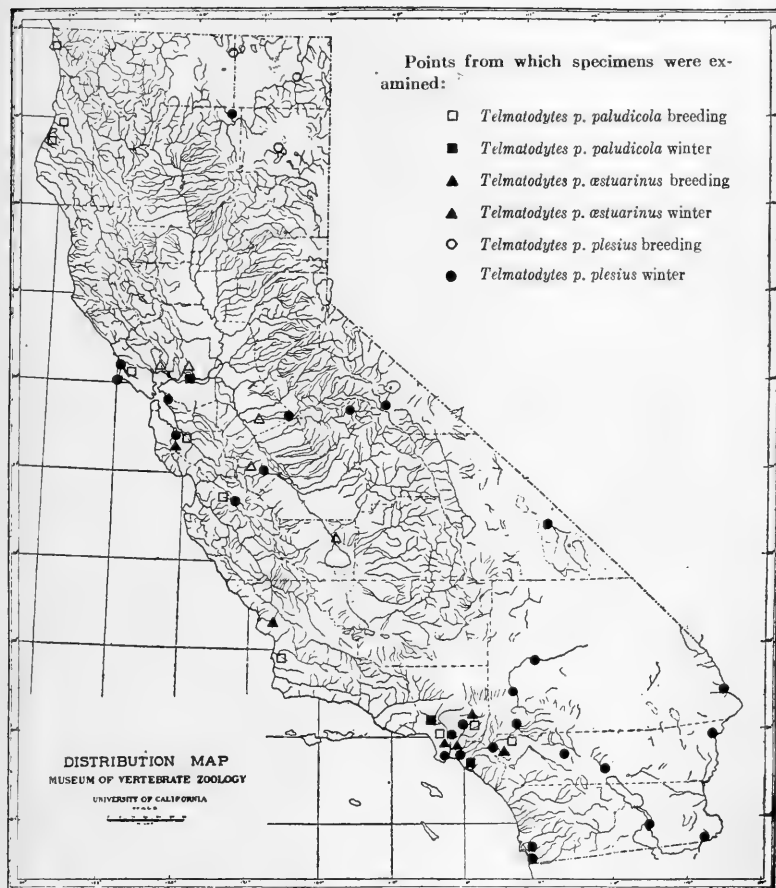
A REVISION OF THE MARSH WRENS OF CALIFORNIA.¹

BY HARRY S. SWARTH.

AN extensive series of marsh wrens from the delta region east of San Francisco Bay has been accumulated in the California Museum of Vertebrate Zoölogy, chiefly through the personal efforts of Misses Annie M. Alexander and Louise Kellogg. The appearance of these birds contrasts so strongly with specimens available from other parts of California that it has seemed desirable to make a careful study of their systematic status. With this object in view, as many specimens as possible have been assembled illustrative of the Long-billed Marsh Wren (*Telmatodytes palustris*) upon the Pacific Coast, especially in California. Although each of the several collections examined or appealed to contained but a meager representation of the species, still, by assembling material

¹ Contribution from the University of California Museum of Vertebrate Zoölogy.

from many sources, and for the use of which specific acknowledgment is made beyond, a total of 239 skins became available. This series, while still leaving gaps to be filled before any precise plotting of breeding ranges can be made, is more than any previous student



Distribution in California of the subspecies of *Telmatodytes palustris*.

of the subject has had at his disposal, and is sufficient to indicate that there are three, instead of two, distinguishable subspecies in California. It also suffices to indicate with a fair degree of accuracy

the summer and winter distribution of these three races within the State.

The greater part of the series under consideration is from the Museum of Vertebrate Zoölogy, including, besides the State collection, the Grinnell, Morcom, and Swarth collections. This, however, although by far the most extensive series available from any one source, still left much to be desired in the way of adequate material from certain regions. The loan of specimens from other collections has filled these gaps to some extent. The collections in the Los Angeles County Museum of History, Science and Art, were at the writer's disposal, including the Daggett, Richardson, Willett, Lamb and Law collections, which are housed there. To the United States National Museum, through Dr. C. W. Richmond, Assistant Curator of Birds, the writer is indebted for the loan of certain specimens, particularly the type of Baird's "*Cistothorus palustris*, var. *paludicola*." Other institutions which generously responded to requests for the loan of material were the Biological Survey of the United States Department of Agriculture, the University of Oregon, and the Oregon State Fish and Game Commission. Messrs. Joseph and John W. Mailliard, A. B. Howell and L. E. Wyman also kindly permitted the use of the specimens contained in their several collections. To each of these institutions and individuals the writer wishes to express his sense of obligation, and his appreciation of the aid afforded.

***Telmatodytes palustris æstuarinus*, new subspecies.**

Type.—No. 25349, Museum of Vertebrate Zoölogy; adult male; Grizzly Island, Solano County, California; April 17, 1915; collected by J. Grinnell; original number, 3152.

Subspecific characters.—In coloration *æstuarinus* is darker than the average of *paludicola*, especially as compared with southern Californian examples of the latter. Occasional specimens of *paludicola*, however, from all parts of its range, are quite as dark colored. In dimensions, *T. p. æstuarinus* differs from *T. p. paludicola* in its greater size throughout, being of about the same dimensions as *T. p. plesius*. From *plesius* it differs in its much darker coloration.

Specimens examined from the following localities.—California. Solano County: Cordelia Slough, 7; Grizzly Island, 3; Suisun, 18. Sonoma County: Second Napa Slough, 3. Santa Clara County: Palo Alto, 1.

Los Angeles County: El Monte, 1; San Gabriel River, 1; Los Angeles, 4; Bixby, 1. Riverside County: Corona 1. San Luis Obispo County: San Luis Obispo, 1. Merced County: Los Baños, 15. Kings County: Tulare Lake, 1.

Oregon: Netarts, 1; Elmira, 1; Eugene, 1.

Total, 60.

Remarks.—The characteristics of the bird and mammal fauna of the San Francisco Bay region have been set forth by Grinnell (Univ. Calif. Publ. Zoöl., vol. 10, 1913, pp. 191–194) in a concise summary of conditions at that point, so that there is no need here of dwelling further upon the topic. In the paper cited the possibility is pointed out of the marsh wren of this region proving to be different from the recognized Pacific Coast races, a statement that is borne out by the present study.

The naming of this form of *Telmatodytes palustris* adds another to the five distinctive species of vertebrates already known from the Suisun region, giving added emphasis to the strongly marked faunal peculiarities of the section. The characteristics of the marsh wren are again exactly such as occur in the song sparrow, meadow mouse, and shrew of the same locality and association, namely, an extreme of dark coloration and maximum of size as compared with those forms most nearly related and geographically closely adjacent. The wren is not so closely circumscribed in its habitat as are the song sparrow, meadow mouse, and shrew, its breeding range including at least a part of the San Joaquin Valley. This is shown by fifteen specimens at hand taken at Los Baños, Merced County, in June, four of which are adults and eleven juvenals. The four adults are in excessively worn plumage, but though color characteristics are obscured thereby, measurements of these birds accord so closely with those of Suisun specimens as to leave no doubt as to the subspecific identity of the two series. The young birds also are appreciably larger than full-feathered juvenals of *paludicola* from Humboldt Bay. Three non-breeding birds from Modesto, Stanislaus County, while not extreme examples of *æstuarinus*, are apparently to be referred to this form rather than *paludicola*. A juvenal from Tulare Lake is not with certainty identifiable, but I have tentatively referred it to *æstuarinus*, regarding it as probable that this form inhabits the entire San Joaquin Valley.

Whether the breeding ground also extends northward in the Sacramento Valley, remains to be demonstrated. Three winter birds at hand from the coast of Oregon, apparently referable to *æstuarinus*, point to the possibility of a breeding ground farther north and nearer the point of capture than is the Suisun region. Of these three specimens just one is fairly typical of *æstuarinus* in appearance, the others tending toward *paludicola*. Possibly all three are merely variants of the latter race, showing individual variation towards *æstuarinus*.

There are also at hand, as listed above, a few individuals apparently of this race, from Palo Alto, San Luis Obispo, and various points in the San Diegan region, taken from October to December. This is indicative of a slight migratory movement, or rather a scattering of individuals slightly beyond the breeding confines. Certain of the specimens from the San Diegan region are not absolutely typical, and may be representative of the form as it occurs in the southern San Joaquin Valley.

Conditions on the Pacific Coast are such as to render it not so much a matter of surprise that three races of marsh wren should now be recognized from California, as that the species should not be found to have split up into a greater number of forms. Suitable breeding grounds for birds of this nature are limited in area and isolated at widely separated points. The Pacific Coast marsh wrens, with the exception of *plesius*, are not markedly migratory in habit, and it would seem fair to suppose that these several factors would produce more conspicuous results in differentiation of races than has actually taken place. On the Atlantic Coast of the United States less apparent differences of environment, in a region otherwise not noticeably productive of geographical variants, are accompanied by strikingly differentiated local races of the same species.

Telmatodytes palustris paludicola (Baird).

Type locality.—Shoalwater Bay, Washington.

Range in California.—Resident locally in marshy tracts. In northern California, the region west of the coast ranges; south of San Francisco Bay, along the coast, in the Santa Cruz and San Diegan regions, probably to the Mexican boundary line. There are no specimens of this subspecies at hand

from the Colorado or Mohave desert regions which would serve to indicate seasonal migrations to these points.

Specimens examined from the following localities.—California. Los Angeles County: Los Angeles, 5; Nigger Slough, 3; Torrance, 1; Garnsey, 1; El Monte, 9; Long Beach, 2; Bixby, 3. Orange County: Sunset Beach, 1. Riverside County: Riverside, 2. Santa Barbara County: Guadalupe Lake, 1. San Benito County: Paicines, 3. Stanislaus County: Modesto, 3. Alameda County: San Lorenzo, 2; Berkeley, 1. Santa Clara County: Palo Alto, 15. San Mateo County: San Mateo, 1. Marin County: Head of Limantour Bay, 2; Point Reyes, 2; Bolinas, 1. Sonoma County: Santa Rosa, 1. Solano County: Suisun Marsh, 1; Grizzly Island, 2; Cordelia Slough, 1. Humboldt County: Humboldt Bay, 1; Eureka, 3; Arcata, 1. Del Norte County: Crescent City, 3.

Oregon: Netarts, 2.

Washington: Shoalwater Bay, 1. Seattle, 2. South Tacoma, 1.

Total, 77.

Remarks.— But a cursory examination of the material assembled for the present study was necessary to demonstrate that there were three types represented therein, separable with a fair degree of ease and certainty. The specimens of *plesius* disposed of, there remained the two dark colored coastal races, with the attendant problem as to which of them should bear the name *paludicola*. By the courtesy of the United States National Museum, through Dr. C. W. Richmond, I was enabled to examine Baird's type of *Cistothorus palustris*, var. *paludicola*, indispensable for a proper understanding of the question. There are also at hand, received from the collection of the above mentioned institution and from those of the Oregon State University and the Oregon State Fish and Game Commission, some additional skins from the coast of Oregon and Washington, in the same general region as the type locality of *paludicola*.

While there is no doubt as to the distinctness of the two dark-colored coastal races here recognized, for the differences are trenchant enough to be appreciable at a glance, the nature of the type of *paludicola* makes it difficult to decide as to which of the two is the unnamed form. The type specimen of *paludicola* is a non-sexed bird taken October 31, a date that renders it possible at least that it was a winter visitant at the point of capture (Shoalwater Bay, southern Washington), and not representative of the breeding bird of that region. In size it is somewhat larger than the average

of the subspecies as here recognized, and tends accordingly towards *astuarinus* in appearance. Judging from the appearance of this specimen, the suggestion arose of the probable division of the Pacific Coast marsh wren into two races, northern and southern; one of the two, a larger form, *paludicola*, in the north, south to San Francisco Bay and the Suisun region; the other, a smaller, unnamed race, along the southern coast district. This was the writer's first idea of the state of affairs; but breeding birds which became available from scattered points along the entire coast from Washington to southern California, demonstrated the essential unity of the series, though with an appreciable diminution in size southward. (Most breeding birds from the San Diego region are decidedly smaller than any from other points.)

***Telmatodytes palustris plesius* (Oberholser).**

Type locality.—Fort Wingate, New Mexico.

Range in California.—Breeds in the northeastern corner of the State (the Modoc or Great Basin faunal area). There are breeding birds at hand from the following localities: Pit River near Alturas, Tule (= Rhett) Lake, and Eagle Lake. One from Fort Crook may or may not be a breeding bird. There are no data to indicate whether or not any individuals of this race remain through the winter on the breeding grounds. The subspecies is abundant in winter in suitable spots on the Colorado and Mohave deserts; it also occurs in large numbers in the San Diégan region, and in much lesser numbers in the San Joaquin Valley and northward along the coast as far as Marin County.

Specimens examined from the following localities.—California: Imperial County: Fort Yuma, 5; Brawley, 1. San Diego County: Tia Juana River, 1; San Diego, 1. Riverside County: Mecca, 7; Palm Springs, 2; Riverside Mountain, 1; Lower Chemehuevis Valley, 1; Corona, 2. San Bernardino County: Yermo, 3; Victorville, 4; San Bernardino, 1. Los Angeles County: Long Beach, 4; Bixby, 4; San Pedro, 1; Alamitos, 1; El Monte, 2; Los Angeles, 7; Pasadena, 2; Nigger Slough, 1. Inyo County: Death Valley, 1. Mono County: Gem Lake, 1. Mariposa County: Yosemite Valley, 1. Stanislaus County: La Grange, 1. San Benito County: Paicines, 1. Santa Clara County: Palo Alto, 2. Merced County: Los Banos, 1. Alameda County: Berkeley, 1. Marin County: Point Reyes, 1; Tomales Point, 1. Lassen County: Eagle Lake, 1. Shasta County: Fort Crook, 1. Siskiyou or Modoc County: Tule (= Rhett) Lake, 2. Modoc County: Alturas, 2.

Oregon: Burns, 1; Camp Harney, 1; Fort Klamath, 2; Corvallis, 1.

Nevada: Lovelock, 1; Quinn River Crossing, 1.

Idaho: Nampa, 6.

British Columbia; Cariboo Road, 1.

Total, 82.

Remarks.—The known breeding range of the western marsh wren in California is very limited, being merely the restricted northeastern corner of the State, a region which shows strongly Great Basin faunal affinities. In winter, however, *plesi*us is perhaps the most abundant of any form of the species, occurring in numbers over a large part of the state. It is an especially numerous winter visitant in the San Diegan district of southern California. In this region summer is the dry season, a period of such excessive aridity that birds with the needs and proclivities of the marsh wrens are closely limited as to habitat, being restricted to extremely circumscribed areas about the few suitable permanent streams and sloughs. In winter this is all changed. Abundant rains often transform what were dry fields and pastures into ponds and marshes, while every roadside ditch is running full, and bordered with dense vegetation. In consequence, the visiting marsh wrens are enabled to scatter widely over the country. It may be that the resident birds even at this time adhere somewhat closely to their restricted summer habitat, but, however that may be, it is the writer's experience that in southern California indiscriminate winter collecting of marsh wrens in the places where they are most easily obtained, will produce several examples of *plesi*us to one of the resident *paludicola*.

Going northward in California there is a great and abrupt lessening of numbers of the subspecies *plesi*us as the San Diegan region is left behind. There are a few specimens at hand from various scattered points: One from Los Baños, in the central San Joaquin Valley; one from Paicines and two from Palo Alto, from the coast region south of San Francisco Bay; one from Berkeley; two from Point Reyes and Tomales Point, Marin County. It is worth noting that there is not a single example of this subspecies in the extensive series of marsh wrens collected in the Suisun region. These facts are clearly illustrative of the winter range of *plesi*us in California, with its metropolis in the southern end of the state (both on the deserts and in the San Diegan region) and with

scattering individuals occurring northward in the San Joaquin Valley and along the coast at least as far as Marin County. The presence in the series from Oregon, however, of a typical example of *plesius* (a winter bird) from Corvallis, in the northern coast region of this state (University of Oregon Mus. No. 1081) shows that individuals of this form may occasionally be found in winter at any point along the coast.

The subspecies is generally regarded as a winter visitant, only, on the Colorado Desert (see Grinnell, Univ. Calif. Publ. Zoöl., vol. 12, 1914, p. 211), as in the San Diegan region, but there is one specimen in the Morcom collection collected at Fort Yuma on May 7, a date which suggests the possibility, at least, of its being a breeding bird. The extensive series from southern California contains few specimens which are helpful in determining average dates of arrival and departure, most of them having been taken from November to February. The earliest date represented is for a specimen from San Pedro, October 3, but it seems probable that the species arrives in southern California some weeks earlier. The latest date from southern California, aside from the Fort Yuma example above mentioned, is from Mecca, about the center of the Colorado Desert, April 17.

The series of *plesius* here assembled exhibits a rather wide range of variation, both as to color and size, so much so as to suggest the possibility of more than one recognizable form being included under this name. This suspicion is emphasized by the appearance of six fall birds from Nampa, Idaho, which are of an extreme grayness of coloration not to be matched by any winter birds from California. The status of these several series, however, is a problem to be solved by some future worker with an abundance of breeding birds from appropriate localities. In series of winter specimens of this or comparable species there are sure to be many intermediates, sometimes extremely difficult to recognize as such, and always hard to adjudge as to their real significance. So it must suffice to say here that, compared with the Idaho specimens (which may be presumed to be fairly typical of *plesius*), winter birds from California are, with hardly an exception, more richly colored, less grayish, and with appreciably darker flanks. This generally darker coloration is by no means correlated with small

size, so is not to be looked upon as indicative of mere intergradation with the smaller and darker race *paludicola*. There are, however, a number of small sized individuals in the series, which, despite this character, are readily distinguishable from the latter race. These are nearly all from the Colorado and Mohave deserts.

In Oberholser's description (Auk, Vol. 14, 1897, pp. 186-196) of *Cistothorus palustris plesius* mention is made (p. 192) of an August specimen from Fort Klamath, Oregon, which though referred to *plesius*, is regarded as intermediate between that race and *paludicola*. This skin is before me, and the characteristics mentioned are readily appreciable. There is another specimen at hand, a January bird, from Camp Harney, in the same general region, which is even darker in appearance, though again apparently referable to *plesius*. The Fort Klamath bird can be closely matched as to color by others from southern California, which I also regard as non-typical examples of *plesius*.

The question arises as to the relationships of the breeding bird of south-central Oregon to *æstuarinus* of the Suisun region, a question that cannot be settled without material from the Sacramento Valley. This region is not represented by a single specimen in the series under consideration. It is at any rate a possibility that *æstuarinus* extends north through the Sacramento Valley to southern Oregon, its range interposed between those of *plesius* and *paludicola*, and that at the north mergence of characters occurs with either one or both of the latter races. The few birds at hand from southern Oregon, and from certain other points (as noted under *æstuarinus*) are certainly suggestive of such a possibility.

MEASUREMENTS IN MILLIMETERS (AVERAGE, MINIMUM AND MAXIMUM) OF PACIFIC COAST RACES OF *Telmatodytes palustris*.

	Wing	Tail	Culmen	Tarsus	Middle Toe without Claw
<i>Telmatodytes p. paludicola</i> 8 males, San Diegan district, Calif.	48.2 (44.0-49.5)	43.2 (41.0-44.5)	12.5 (11.5-13.0)	18.7 (17.0-19.0)	12.2 (11.0-13.0)
8 females, San Diegan district, Calif.	47.1 (45.0-49.5)	41.0 (39.5-43.0)	11.9 (11.5-12.5)	17.7 (17.0-18.0)	11.8 (11.5-12.0)
3 males, Santa Clara and Marin counties, Calif.	47.5 (47.2-48.0)	43.5 (41.0-45.5)	12.1 (11.5-12.8)	17.4 (17.0-18.0)	12.7 (12.2-13.0)
10 females, Santa Clara and Marin counties, Calif.	47.3 (45.5-48.0)	42.4 (41.0-44.0)	11.8 (11.0-12.5)	18.0 (17.5-19.0)	12.1 (12.0-12.5)
6 (4 males, 2 sex undetermined), Marin County, Humboldt Bay and Crescent City, Calif.; Shoal- water Bay and Tacoma, Wash- ington.	48.1 (46.0-49.5*)	43.1 (40.0-45.0*)	11.9 (11.5-12.8)	18.0 (17.0-19.2*)	12.4 (11.0-13.0*)
<i>Telmatodytes p. aestuarinus</i> 10 males, Solano and Sonoma counties, Calif.	51.6 (50.5-53.0)	46.8 (45.5-49.0)	13.0 (12.2-13.5)	17.8 (17.0-20.0)	13.04(12.0-13.5)
2 females, Solano and Sonoma coun- ties, Calif.	52.0 (51.0-53.0)	48.5 (48.0-49.0)	12.7 (12.5-13.0)	19.0	12.7 (12.5-13.0)
<i>Telmatodytes p. plebeius</i> 10 males, Colorado and Mohave deserts, Calif.	53.6 (52.0-55.5)	47.2 (45.0-49.0)	13.4 (13.0-14.5)	19.7 (19.0-20.5)	12.9 (12.0-13.5)
8 females, Colorado Desert and San Diegan district, Calif.	51.5 (49.0-55.5)	45.5 (41.5-50.0)	12.9 (12.5-13.5)	18.9 (17.2-20.5)	11.9 (11.0-13.0)

* Measurements of type specimen of *Cislothorus palustris paludicola* Baird.



1. SETTLING ON NEST.



2. ARRANGING NEST.

FLORIDA GALLINULE.

NESTING OF THE FLORIDA GALLINULE.

BY VERDI BURTCH.

Plates XI-XII.

IN the spring of 1916 the water was very high in the marsh at Branchport, N. Y., and nearly all of the early nests of Red-winged Blackbirds and Florida Gallinules were submerged and destroyed. One pair of Gallinules had completed their nest near the margin of the marsh and only a short distance from my house. Six eggs had been layed when a rise of the water covered the nest causing it to disintegrate, letting the eggs through the bottom of it where I found them resting on the mud below.

Soon after this, June 11, and a beautiful moonlight night, I was pushing my boat through the flags when I found a Gallinule's nest containing one egg. It was in the same locality as the first mentioned nest and I have no doubt that it was constructed by the same birds. On the 16th, it rained very hard all day and all night and when I visited the nest next day I found it under water. The five eggs which it now contained were nearly under water and the female Gallinule was swimming around close to the nest. Thinking that she might desert the nest if I disturbed her I passed quickly on. The next day there were six eggs in the nest and I was surprised to find that the Gallinules had added new green flags to the nest raising it, *eggs and all* at least ten inches higher. The eggs were now about ten inches above the water and no more eggs were laid but the nest was made more compact and substantial.

July 1, I erected a blind about ten feet from the nest and at 8.50 A. M. next day I concealed myself therein. Both Gallinules were heard when I first arrived then were still until 9.15 when there was a splash in the water near by and the female appeared for a moment then went away again. At 9.30 she cackled *cut, cut, cut-cut-cut-cut-cut* and at 9.40 she came to within ten feet of the nest, sounded alarm note then made a complete circle around the blind and went on the nest at 9.50 unobserved by me. There she sat pulling the growing flags to and around her and at 10.15

the male called *kr-r-r-r-k*, *kr-r-r-r-k*, and she answered, *krup'*. The nest was exposed to the hot sun, as I had cut some of the flags away, and she stood in the nest with her feathers ruffled, panting and trying to pull the flags around her, and frequently uttered a low *ku ku ku*.

At 10.50 she went to the edge of the nest and drank some water, arranged her feathers a few minutes then slid into the water and swimming rapidly away met and passed the male as he came swimming towards the nest. He did not go on the nest at once but maneuvered around until 11 o'clock, then as he was going on I released the shutter of my camera and he jumped back and scolded. Again he cautiously approached and then retired again. Once again he came and was all settled on the nest at 11.10. However he appeared rather suspicious, stretching out his neck and swaying his head from side to side, his dark red eyes shining and his tail flipping as he scrutinized the blind.

At 11.30 the female called *kr-r-r-r-k* from way out in front and was answered from the nest by the male. At 11.40 she uttered conversational notes then the creak and was answered by the male with explosive base notes in a low tone. She kept up the conversational notes until the male called rather impatiently. Then she appeared at 11.45 and they changed places, she going on to the nest immediately after he had left it. I remained in the blind until 12.15 when my movements alarmed her and she left the nest.

July 3, we had another hard rain and when I visited the blind the afternoon of the 4th, more green flags had been added to the nest raising it several inches higher.

July 5, I arrived at the blind at 1.30 P. M. The female Gallinule was seen back of the nest at 1.40. The wind was blowing hard flapping the cover of the blind, which seemed to bother her and she came on cautiously, advancing and retiring again several times, then she gave a sharp *cak'* and swam rapidly to the nest. Behind her came the male following her up close to the nest when she went on and settled down, then he retired. She spent much of the time while she was on the nest in arranging the nest materials and trying to pull the growing flags around her.

At 2.40 she was peering ahead into the water, the nest began to move and a turtle appeared close beside the nest. She stood up



1. DISTURBED BY A TURTLE.



2. RESUMING POSITION AGAIN.

FLORIDA GALLINULE.

backing to the edge of the nest where she raised her wings threateningly and uttered the creaking note in a frightened tone. The turtle soon disappeared but she remained at the side of the nest creaking softly for several minutes, then peering ahead she cautiously settled down to brood.

Next day I found the nest all mussed up with three of the eggs remaining in it and two more in the water on one side. I was in the blind nearly an hour and although I heard Gallinules near several times none came to the nest.

On examination the nest appeared to have become water soaked one side disintegrating so that the weight of the Gallinule had caused it to sink and spill the eggs. Or perhaps a turtle had tried to climb upon the nest. However this does not seem probable as the eggs had not been destroyed.

Incubation was almost complete in some of the eggs and there would have been young in the nest inside of two days and I had hoped to be in the blind at this interesting time.

NOTES ON NORTH AMERICAN BIRDS.

II.

BY HARRY C. OBERHOLSER.

LIKE the first installment¹ the present paper is made up of various notes on North American birds. A few of the birds treated below belong to species or genera which are much in need of revision, and the notes on such have been withheld for years in the expectation that time and opportunity would avail for thorough study of these groups. But since this does not appear possible in the near future, these comments are now presented in this form in the hope that they may be of at least some assistance to ornithologists.

¹ For the first paper of this series see 'The Auk,' XXXIV, April, 1917, pp. 191-196.

***Vireo bellii arizonæ* Ridgway.**

The Arizona form of *Vireo bellii* was originally characterized by Mr. Ridgway in 1903¹ from a type collected at Tucson, Arizona. It has commonly been considered as inseparable from *Vireo bellii pusillus* Coues, but by a study of our Texas and other material, some of this additional to that available to Mr. Ridgway, the race is shown to be readily distinguishable from both *Vireo bellii pusillus* of California as well as from *Vireo bellii medius* of central western Texas. It differs from the former in having the upper parts decidedly more greenish (less grayish), and the lower parts less whitish, the sides and flanks much more strongly tinged with olive grayish and more washed with yellowish. The wing and tail average somewhat shorter, but these differences are not of much value in identifying specimens. From *Vireo bellii medius* Oberholser it may readily be distinguished by its decidedly longer tail and much paler and more grayish coloration, both above and below.

The geographic distribution of *Vireo bellii arizonæ* extends from the extreme western portion of central western Texas west to southern Arizona, and south to the Mexican states of Sonora, Sinaloa, and Chihuahua.

***Bæolophus inornatus murinus* Ridgway.**

This race of *Bæolophus inornatus* was first made known by Mr. Ridgway in the Proceedings of the Biological Society of Washington, Volume XVI, June 25, 1903, page 109, as *Bæolophus inornatus murinus*, from a specimen taken in the Nachoguero Valley, northern Lower California. It was later more fully described by him²; it was also recognized some years later by Dr. Joseph Grinnell and Mr. H. S. Swarth;³ and subsequently, though without comment, by Doctor Grinnell in Pacific Coast Avifauna No. 11, 1915, p. 163; but it seems to have been otherwise generally ignored by ornitho-

¹ *Vireo bellii arizonæ* Ridgway, Proc. Biol. Soc. Washington, XVI, September 30, 1903, p. 108.

² Bull. U. S. Nat. Mus., No. 50, part III, 1904, pp. 389-390.

³ Univ. Calif. Publ. Zool., X, No. 10, October 13, 1913, p. 310.

logical writers. Examination of the material available shows that it is, however, a recognizable subspecies, differing from *Bæolophus inornatus inornatus* in its more grayish coloration and additionally in its darker under parts; and from *Bæolophus inornatus griseus* in its decidedly darker color. It ranges in the Pacific coast region from northern Lower California north through southern California to Santa Barbara County.

***Bæolophus wollweberi annexus* (Cassin).**

The existence of two forms of *Bæolophus wollweberi* (Bonaparte) was first noticed by Mr. Ridgway.¹ His distinction has subsequently been ignored and the entire species included under one form. That there are, however, two readily distinguishable races is evident on comparison of specimens from Arizona with those from central and southern Mexico. The northern race differs from the southern in its decidedly paler coloration both above and below.

This species was originally described as *Lophophanes wollweberi* from Zacatecas, Mexico, by Bonaparte.² Birds examined from Huasamota, Durango, which is considerably north of Zacatecas, prove to be almost identical with those from southern Mexico, though verging slightly toward the northern race; consequently the specific name *wollweberi* must apply to the southern bird, which, therefore, becomes the typical race. A name for the northern bird is, as already shown by Mr. Ridgway, found in *Parus annexus* Cassin,³ described from a specimen purporting to be from the Rio Grande in Texas. As, however, the species is not known to occur in Texas, this locality is probably erroneous; but the applicability of the name is undoubted, since the type, which has been examined, proves to be identical with birds from Arizona. The northern race of the species must, therefore, stand as *Bæolophus wollweberi annexus* (Cassin). Its geographic distribution is as follows:

¹ Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 393.

² Comptes Rendus Acad. Sci., XXXI, October, 1850, p. 478.

³ Proc. Acad. Nat. Sci. Phila., V, October, 1850, p. 103, pl. I.

Mountains of northwestern Mexico and contiguous portion of the southwestern United States; north to southwestern New Mexico and southern Arizona; west to Sonora; south to Sonora and Chihuahua; and east to Chihuahua and southwestern New Mexico.

The range of *Bæolophus wollweberi wollweberi* is consequently restricted to the mountains of central and southern Mexico, north to Zacatecas and Durango, and south to Vera Cruz, Puebla, and Oaxaca.

***Geothlypis trichas brachidactyla* (Swainson).**

This race of *Geothlypis trichas* was first properly distinguished by Mr. William Palmer,¹ although the *Trichas brachidactylus* of Swainson,² based on birds from the northern provinces of the United States, is its earliest name. It has in recent years been generally discredited, possibly on account of the difficulty in distinguishing worn specimens; but with the proper material from typical sources, it may be easily recognized. It differs from *Geothlypis trichas trichas* in its larger size, and, in the male, by reason of its more greenish upper surface, more whitish frontal band of gray, more extensively yellow posterior lower parts, and its usually more brownish flanks. The female is similar to that of *Geothlypis trichas trichas* but is larger, more greenish above, and slightly paler.

The geographic range of *Geothlypis trichas brachidactyla* includes the northeastern United States and southeastern Canada; the bird breeding north to Newfoundland, central Quebec, northern Ontario, northern Minnesota, and northeastern North Dakota; west to central North Dakota and central Nebraska; south to northeastern Kansas, southern Illinois, southern Indiana, Ohio, northern Pennsylvania, and northern New Jersey; and east to the Atlantic coast from northern New Jersey to Nova Scotia and Newfoundland. It winters south to the Bahama Islands, Cuba, Jamaica, Swan Island in the Caribbean Sea, Costa Rica, Nicaragua, Guatemala, southern and eastern Mexico.

¹ Auk, XVII, July, 1900, pp. 221, 226-228.

² Anim. in Menag., 1838, p. 295.

***Dendroica caerulescens cairnsi* Coues.**

The status of this race has recently been questioned by Mr. C. W. G. Eifrig¹ on account of two intermediate male specimens collected in the Allegheny Mountains of western Maryland; and on this basis it is proposed to eliminate the form from the North American list.²

Examination, however, of a large series of birds of this species representing both *Dendroica caerulescens caerulescens* and *Dendroica caerulescens cairnsi* indicate that the two current races are clearly recognizable. While it is true that the amount of black on the back of the male varies considerably in both forms and that males from New York and New England occasionally have much black on the interscapulum, it is also true that the southern birds have on the average a much greater amount of black and are almost never entirely without these black markings. There are, however, other characters in the male which serve to separate *Dendroica caerulescens cairnsi* from *Dendroica caerulescens caerulescens*, such as the darker shade of the bluish ground color of the upper parts, especially the pileum, which also is sometimes streaked with black. The female of *Dendroica caerulescens cairnsi* is even more easily distinguished than is the male, for it is darker and duller above as well as less yellowish on the lower parts, and has the olivaceous color of the flanks darker and more strongly contrasted with the pale dull yellowish of the middle of the abdomen. In characterizing this southern race of the Black-throated Blue Warbler altogether too much emphasis has heretofore been placed on the amount of black on the back of the male, for the subspecies, as above indicated, would not fall with this character alone, since the coloration of females is undoubtedly the best diagnostic character. In fact, *Dendroica caerulescens cairnsi* is a perfectly recognizable race and deserves retention in our list.

Mr. Eifrig, in the communication above mentioned, has intimated that the breeding form of this species in the mountains of western Maryland is the northern race, *Dendroica caerulescens*

¹ Auk, XXXII, January, 1915, p. 110.

² Cf. Stone, Auk, XXXIII, October, 1916, p. 431.

cærulescens, basing this statement on two adult males which seem to be nearer that form. In this region, which is the transition ground between many northern and southern races, particularly those of the Allegheny Mountains, we should expect to find specimens that would give more or less trouble in their identification, and this is true not only in the particular species under consideration but in several others. There are in the Biological Survey collection 9 adult specimens of the Black-throated Blue Warbler from the mountains of western Maryland, taken at Finzel, Bittinger, and Kearney. This series includes both males and females, and while some of the specimens incline strongly toward *Dendroica cærulescens cærulescens*, and all of them are more or less intermediate, the series as a whole shows that the breeding form of this region is *Dendroica cærulescens cairnsi*.

***Vermivora celata orestera* Oberholser.**

The Rocky Mountain form of *Vermivora celata* was originally described¹ from Willis in northern New Mexico. Most subsequent authors, doubtless from lack of sufficient material, have failed to recognize its distinctness. Additional material from various parts of its range, examined since the original description was published, fully substantiates the characters of the race as they were given. It is readily distinguishable from *Vermivora celata celata* by its larger size and much more yellowish coloration both above and below; and from *Vermivora celata lutescens* by its much greater dimensions and by the duller, less yellowish color of both upper and lower parts. Thus, while *Vermivora celata orestera* is intermediate in the character of its coloration between *Vermivora celata celata* and *Vermivora celata lutescens*, it is not so in size, for it is larger than either. It occupies much the same relation to the eastern and western races of its species as does *Wilsonia pusilla pileolata* to *Wilsonia pusilla pusilla* and *Wilsonia pusilla chryscola*. Detailed measurements of this and the other forms of *Vermivora celata* may be found in the present writer's previous paper on the subject.²

¹ *Vermivora celata orestera* Oberholser, Auk, XXII, July, 1905, p. 243.

² Auk, XXII, April, 1905, pp. 246-247.

The geographic distribution of *Vermivora celata orestera* is as follows:

Western United States, southwestern Canada, central and northern Mexico. Breeds north to southern Alberta and southern British Columbia; west to eastern Washington, eastern Oregon, and eastern California; south to southeastern California, southern Arizona, and central New Mexico; east to New Mexico, Colorado, Wyoming, and Montana. Winters south to the Mexican states of Tamaulipas, Puebla, Morelos, Guerrero, Michoacan, Jalisco, and southern Lower California. Migrates east to Minnesota and casually to Pennsylvania.

***Molothrus ater artemisiæ* Grinnell.**

The northwestern form of *Molothrus ater* was described by Dr. Joseph Grinnell as *Molothrus ater artemisiæ*¹ from the Quinn River Crossing in Humboldt County, Nevada. Five days later appeared the description of *Molothrus ater dwighti* by Dr. Louis B. Bishop,² based on specimens from Crane Lake, Saskatchewan, Canada. These two birds are undoubtedly the same, and of course the former name has priority. This race has since been generally ignored, but examination of a large amount of material shows that it is nearly as well characterized as *Molothrus ater obscurus*. It is even larger than *Molothrus ater ater*, as may be seen by consulting the detailed measurements given by Dr. Bishop,³ and has a longer and relatively slenderer bill, the outline of the culmen being not so convex. The female is similar to the same sex of *Molothrus ater obscurus*, but is paler, more brownish, with a usually more whitish throat. With *Molothrus ater obscurus* it scarcely needs comparison, as it is in every respect so much larger.

The geographic ranges of the three forms of *Molothrus ater*, after the revision now necessary by the recognition of an additional subspecies, are as follows:

Molothrus ater ater.—Eastern North America: breeds north to New Brunswick, Quebec, and Ontario; west to Minnesota, Iowa,

¹ Univ. Calif. Publ. Zool., V, No. 5, December 31, 1909, p. 276.

² Auk, XXVII, No. 1, January 4, 1910, p. 61.

³ Auk, XXVII, No. 1, January 4, 1910, pp. 61-62.

southeastern Montana, eastern Wyoming, Colorado, and New Mexico; south to southern New Mexico, central western and central Texas, Louisiana, and North Carolina; east to the Atlantic coast from North Carolina to New Brunswick; and winters south to the Gulf coast of the United States and the Mexican states of Tamaulipas, Yucatan, Zacatecas, Michoacan, and Sinaloa.

Molothrus ater artemisiæ.—Western United States and western Canada: breeds north to southern Keewatin and southern Mackenzie; west to Alberta, Oregon, and California; south to south central California, Nevada, central Utah, southwestern Wyoming, southwestern Montana, and central Montana; east to eastern North Dakota and Manitoba; and winters south to southern Texas and the Mexican states of Vera Cruz, Michoacan, Tepic, and southern Lower California. Casual east to Fort Snelling, Minnesota.

Molothrus ater obscurus.—Mexico and the southwestern border of the United States: breeds north to southern Louisiana, southern Texas, central Arizona, and southern California, south to Tamaulipas, Oaxaca, Colima, Sinaloa, and southern Lower California.

***Loxia curvirostra bendirei* Ridgway.**

This crossbill was first described by Mr. Ridgway from Fort Klamath, Oregon.¹ Although Mr. Ridgway has since consistently recognized it, and in his "Birds of North and Middle America" has set forth its characters in detail with tables of measurements,² it has been generally discredited. A recent careful examination of all material available shows, however, that this race is well deserving of recognition, although, as often happens in closely allied subspecies, the characters are largely average distinctions. It differs from *Loxia curvirostra minor* in decidedly larger size and rather paler colors; and occupies, moreover, a definite and very extensive range in the western United States. From *Loxia curvirostra stricklandi* it differs in being decidedly smaller. While it thus is intermediate between *Loxia curvirostra minor* and *Loxia*

¹ *Loxia curvirostra bendirei* Ridgway, Proc. Biol. Soc. Wash., II, April 28, 1884, p. 101.

² Bull. U. S. Nat. Mus., No. 50, part I, 1901, p. 50.

curvirostra stricklandi, and some of its specimens are troublesome to distinguish with certainty, most individuals are without difficulty determinable. In view of these facts it seems desirable to recognize *Loxia curvirostra bendirei* as an additional race. Detailed measurements of all three American forms of this species can be found in Mr. Ridgway's "Birds of North and Middle America."¹ The geographic distribution of *Loxia curvirostra bendirei* as now made out is as follows:

Breeds in the mountains of the western United States, north to Wyoming and Montana; west to Oregon and California; south to southern California and northern New Mexico; and east to Colorado. Migrates east to eastern Nebraska, Kansas, and central Texas; west to the coast of southern California; and casually to Guadalupe Island, Lower California.

Passer hostilis Kleinschmidt.

The British form of *Passer domesticus*, with which the birds from the United States are identical, was recently described by Kleinschmidt as *Passer hostilis*.² Notwithstanding the fact that Kleinschmidt used a binomial designation he really intended to describe the British bird as a subspecies of the typical continental form, as may readily be seen by consulting his remarks. Furthermore, the difference between the two forms is not a constant one, being merely a matter of the average smaller size of the British bird. The proper designation of the British and consequently the North American bird is, therefore, *Passer domesticus hostilis*. In view of this recent development, the name "English" Sparrow, by which this bird is commonly known in the United States, is not such a misnomer after all.

¹ Bull. U. S. Nat. Mus., No. 50, part I, 1901, pp. 47-52.

² Falco, XI, No. 2, December, 1915, p. 19 (type locality, Tring, England).

A SYNOPSIS OF THE RACES OF *BOMBYCILLA*
GARRULA (LINNÆUS).

BY HARRY C. OBERHOLSER.

WHEN Mr. Ridgway last treated the Bohemian Waxwing he found no subspecific differences in any part of its range.¹ A recent examination and comparison of specimens of this species from Europe, Asia, and North America, including much material additional to that examined by Mr. Ridgway shows that the North American bird is decidedly different in coloration from that of Europe. The bird from Asia, though to a certain extent intermediate, is yet racially distinguishable from those of both Europe and North America. Three subspecies are thus recognizable, as set forth below.

The generic name *Bombycilla* Vieillot,² which has currently been used for this group, has been rejected³ in favor of *Ampelis* Linnæus, on the ground that the type of *Ampelis* Linnæus is by tautonomy *Lanius garrulus* Linnæus. A recent examination of the original description of *Ampelis* Linnæus⁴ shows, however, that while the word *Ampelis* was used in the synonymy, it was not in the sense of the *Ampelis*, but merely as part of a descriptive polynomial. Thus, according to the ruling of the International Commission on Nomenclature, this can not be construed as constituting tautonomy in a pre-Linnean publication such as Linnæus' *Fauna Suecica*. Consequently the type of *Ampelis* must be subject to subsequent designation, which apparently was first made by Gray in 1840, by whom *Ampelis cotinga* Linnæus was selected.⁵ The generic name for the waxwings, therefore, must revert to *Bombycilla* Vieillot.

¹ Bull. U. S. Nat. Mus., No. 50, part 3, 1904, pp. 105-109.

² Ois. Amér. Sept., I, 1807 (1808), p. 88, pl. 57 (type, by monotypy, *Bombycilla cedrorum* Vieillot).

³ Committee Brit. Ornithologists' Union, List Brit. Birds, 1915, p. 362.

⁴ Syst. Nat., ed. 12, I, 1766, p. 297.

⁵ List Genera Birds, 1840, p. 34.

Bombycilla garrula garrula (Linnæus).

[*Lanius*] *garrulus* LINNÆUS, Syst. Nat., ed. 10, I, 1758, p. 95 (Europe and North America).

Corvus hientericus TEMMINCK, Cat. Systématique Cabinet d'Ornith., 1807, p. 43 (nom. nov. pro *Ampelis garrulus* Gmelin).

Bombyciphora poliocælia MEYER, Vogel Liv.- u. Esthlands, 1815, p. 104 (nom. nov. pro *Lanius garrulus* Linnæus).

Bombycilla Bohemica LEACH, Synopt. Cat. Brit. Birds, 1817, p. 6 (nom. nov. pro *Lanius garrulus* Linnæus).

Garrulus europæus DUMONT, Dict. Sciences Nat., XXIV, 1822, pp. 184, 185 (nom. nov. pro *Ampelis garrulus* Linnæus).

Garrulus major DUMONT, Dict. Sciences Nat., XXIV, 1822, pp. 184, 185 (nom. nov. pro *Ampelis garrulus* Linnæus).

Parus Bombycilla PALLAS, Zoogr. Rosso-Asiat., I, 1826, p. 548 (nom. nov. pro *Lanius garrulus* Linnæus).

Bomb[ycilla]. brachyrhynchos BREHM, Vogelfang, 1855, p. 79 (middle Europe).

Bombycilla cærulea DUBOIS, Rev. et Mag. de Zool., XII, 1860, p. 2 (lapsus calami pro *Bombycilla garrula*).

Bombycilla garrula vulgaris HARTERT, Vogel paläarkt. Fauna, I, Heft IV, March, 1907, p. 456 (A. E. Brehm MS.) (nom. nov. pro *Lanius garrulus* Linnæus) (in synonymy).

Chars. subsp.—Colors darkest and most vinaceous.

Measurements.—Male:¹ Wing, 114 mm.; tail, 62; exposed culmen, 10.5; tarsus, 20; middle toe without claw, 16.

Both sexes:² Wing, 110–120; tail, 62–70; exposed culmen, 11–12; tarsus, 20–21.5.

Type locality.—Sweden (designated by Hartert).³

Geographic distribution.—Europe: Breeds north to northern Russia and northern Norway, and south to about 65° north latitude; winters north to southern Norway; west to Ireland; and south to England, southern France, northern Italy, and Turkey.

Remarks.—This is the darkest form of the species, and in coloration is decidedly vinaceous above. So far as we are able to determine, it is confined to Europe. In the present connection specimens have been examined from Russia, Norway, Prussia, and Denmark.

¹ One male from Norway. Most of the European birds examined in the present connection are without indication of sex, and therefore have not been used in the above-given measurements.

² From Hartert.

³ Vogel paläarkt. Fauna, I, Heft IV, March, 1907, p. 456.

***Bombycilla garrula centralasiæ* Poljakov.**

Bombycilla garrulus centralasiæ POLJAKOV, Messenger Ornith., VI, April, 1915, p. 137 (Zaissan district, southwestern slope of Altai Mountains, Turkestan, central Asia).

Chars. subsp.—Similar to *Bombycilla garrula garrula*, but paler and somewhat less vinaceous (more cinnamomeus) above, particularly on back and cervix; also averaging less vinaceous below (more grayish).

Measurements.—Male:¹ Wing, 111–119 (average, 114.4) mm.; tail, 59–63 (61); exposed culmen, 10.5–11.8 (11.3); tarsus, 20–20.5 (20.1); middle toe without claw, 16–17 (16.7).

Type locality.—Zaissan district, southwestern slope of Altai Mountains, Turkestan, central Asia.

Geographic distribution.—Asia: Breeds in northern Siberia south at least to Vladivostok; winters south to Turkestan and central eastern China.

Remarks.—Birds of this species from northeastern Asia differ from *Bombycilla garrula garrula* of Europe as mentioned by Poljakov in his original description of *Bombycilla garrula centralasiæ*, and undoubtedly belong to the same form. This race, though to some extent intermediate between *Bombycilla garrula garrula* and the North American bird hereinafter separated as *Bombycilla garrula pallidiceps*, is nevertheless worthy of recognition. The limits of the breeding range are at present unknown, but it is without much doubt the breeding bird of northern Siberia. We have examined a summer specimen from Vladivostok. The area of its intergradation with *Bombycilla garrula garrula* is probably somewhere in western Siberia, but this remains yet definitely to be determined. A specimen from Hsing-lung-shan, 65 miles north-east of Peking, China, taken February 12, 1915, is paler and much more grayish both above and below than other specimens of *Bombycilla garrula centralasiæ*, and may possibly be a wanderer from North America, but for the present it is referred to *Bombycilla garrula centralasiæ*. Specimens of this subspecies have been examined from also Tokio, Iwaki, and Hakodate, Japan; Shanghai and Peking, China; and Bering Island in the Commander Islands.

¹ Average of 6 specimens from Japan, Siberia, and China.

***Bombycilla garrula pallidiceps* Reichenow.**

Bombycilla garrula pallidiceps REICHENOW, Ornith. Monatsber., XVI, No. 12, December, 1908, p. 191 (Shesly River, northern British Columbia).

Chars. subsp.—Similar to *Bombycilla garrula centralasiæ*, but decidedly more grayish (less cinnamomeus) both above and below.

Measurements.—Male:¹ Wing, 111–117 (average, 114.5) mm.; tail, 63–70 (65.5); exposed culmen, 11.5–12.2 (11.9); tarsus, 20–21.5 (20.8); middle toe without claw, 16–19 (17.2).

Type locality.—Shesly River, northern British Columbia, Canada.

Geographic distribution.—Northern and central North America: Breeds north to northern Mackenzie and northern Alaska; west to western Alaska and western British Columbia; south to southern British Columbia and southern Alberta; and east to northeastern Manitoba. Winters east to Nova Scotia; and south, though irregularly, to Connecticut, Pennsylvania, Ohio, Indiana, southern Illinois, Kansas, Colorado, and southern California. Casual in Arizona.

Remarks.—The North American representatives of this species constitute a well-marked and readily recognizable subspecies which differs from *Bombycilla garrula garrula* in its paler, very much more grayish (less vinaceous or cinnamomeus), coloration both above and below, and from *Bombycilla garrula centralasiæ* as above indicated. There is considerable individual variation in the color of the upper surface, and some specimens in this respect overlap the characters of *Bombycilla garrula centralasiæ*; but as a whole the large series which we have examined shows a good average difference. So far as we have been able to determine, there is no geographical variation among the birds from North America, since those from the easternmost part of the range of the species appear to be just the same as those from far western localities. This to a certain extent might be expected, since this waxwing, so far as we know, does not breed east of Hudson Bay. No comparison, however, has been made of breeding birds from southern Alberta and southern British Columbia with those from more northern localities.

¹ Average of ten specimens from Oregon, Washington, and Montana.

GENERAL NOTES.

An Early Colorado Record of the White-tailed Ptarmigan.— There is an exceedingly interesting, but almost unknown book, dealing in part with pioneer times in Colorado entitled *Thirty Years of Army Life on the Border*. It was written by Capt. R. B. Marcy, who later rose to the rank of General in the U. S. Army; his daughter married General Geo. B. McClellan, and his grandson was sometime mayor of New York.

Capt. Marcy had in him the making of a splendid naturalist, but duties and training turned his activities into other channels. This particular book of his, contains many references to birds, and should be read by every one interested in western bird life. During the course of his military duties, Capt. Marcy made a trip from Fort Bridger, Utah, to Fort Montgomery, New Mexico, crossing the Continental Divide over Cochetopa Pass, doing so in the dead of winter (January, 1858); he and his men suffered almost unbelievable hardships from the arctic cold, and from hunger, yet they succeeded in reaching their goal. On page 234 of the above cited book, Capt. Marcy says, "One day we were . . . near the summit of the mountains . . . my guide pointing to a snow bank, said there were some birds he had never but once before seen . . . we . . . killed two of them. They were white as the snow itself . . . two specimens which were sent to Professor Baird of the Smithsonian Institute showed them to be *Sagopus leucurus* [spelling as in original], or white-tail ptarmigan. This beautiful bird was before supposed to be confined to that part of the Rocky Mountain Chain north of latitude 54° north. The specimens sent to Professor Baird are said by him to be the first indication of their occurrence within the limits of our possessions, and it extends the supposed range about a thousand miles to the south."—W. H. BERGTOLD, *Denver, Colo.*

Wild Geese at Moose Factory.— In connection with his work with the wild geese at Kingsville, Ontario, Mr. Jack T. Miner has put tags on a number of Canada Geese, some of which have been returned to him, mainly from the north country, and he has had some interesting letters from Hudson Bay men, from one of which, from Mr. Owen Griffith, Moose Factory, the following quotation is taken.

"I am now stationed here at Moose for the winter and shall be going to Albany in the spring. This is a post on the opposite side of James Bay to Fort George, but a very good place for game, especially those birds we call "Wavies"; it is a strange thing that on the West Coast of James Bay, we get almost nothing but "White Wavies" with an occasional blue one in the flock, while on the East Coast it is just the opposite with almost nothing but Blue (grey) with a few white ones in the flock. While a short distance farther north (on the East Coast) at Whale River the

White reappear again in large numbers, so that they evidently cross the Bay on their annual migrations.

"There are lots of geese both on the East and West sides of the Bay, but I believe that more pass on the East (Fort George side) than the other as the Coast is rocky with lots of islands where they can breed. We have some Islands out in the Bay called the "Tioms" which are great breeding places and every summer the Indians make quite a haul of young and moulting geese there.

"The Indians who killed those tagged geese said that they seemed to be tamer than the others and came out of large flocks and down to the decoys when the rest of the band would not turn.

"About three miles north of Fort George Post there is a big Bay (salt water) with lots of mud and grass at low tide and in the spring almost every flock of wavies and some geese feed in this Bay on their way North; the Indians never hunt them on their arrival in this Bay but gather on a long hill on the other side and then shoot at the birds as they are going off; they generally get up in small flocks and as they have to rise considerably to clear the hill, they can be seen getting up sometime before they get to the hill, and then everyone runs along a path and tries to get right under where the flock is going to pass; of course if three or four flocks get up at the same time, there is shooting on different parts of the hill and the hunters are apt to spoil one another. The Indians say that once these birds leave this Bay that they do not feed again till they get far North (Hudson Straits or Baffin Land) in fact a Wavies' nest is a great rarity. Strange to say they do not feed in this Bay in the fall.

"We have no wild rice in the Bay and the birds seem to feed mostly on grass in the salt water and in the fall they go out to the Islands to feed on berries; they fly out to the Islands in the mornings and back into the small Bays for the nights." — W. E. SAUNDERS, *London, Ont.*

Wood Duck Removing Young from the Nest.—How does the old Wood Duck get her little ones into the water from the nest in a hollow tree or stub, forty or fifty feet from the ground and which is, may be, two or three hundred feet from the water? Mr. Burroughs says, "That the feat of getting down from the tree top cradle had been safely affected probably by the young clambering up on the inside walls of the cavity and tumbling out into the air and then coming down gently like huge snowflakes. The notion that the mother duck takes the young one by one in her beak and carries them to the creek is doubtless erroneous. But this is precisely how she gets them into the water.

Early in July, 1898, while tented on the bank of the Michigamme River, Township 43 — North Range 32 west section one, Iron County, Mich., I had the good fortune to see it done. The nest was in a hollow pine that stood directly back of the tent and about two hundred feet from the water, and the hole where the old duck went in, was fifty or sixty feet from the ground. After seeing the old duck fly by the tent, to and from her feeding

grounds up the river many times during the time of incubation, one morning before sunrise she flew by, from the tree to the river, with a little duck in her beak which she left in an eddy a short distance up stream. She then made ten or twelve trips to the nest and each time took a little duck in her beak by the neck to the water, where they all huddled in a little bunch. It was all done in a few minutes and she evidently took them to the water very soon after they were hatched, as they were only little balls of down. In going to and from work, we passed the little bunch many times. On our approach the old duck would fly away and leave the little ones huddled in a bunch near the shore where the water was quiet.

John Muir in his 'Boyhood and Youth, a Thousand Mile Walk to the Gulf' tells of a friend of his who was a keen observer who had seen the mother wood duck perform this same feat.—E. G. KINGSFORD, *Iron Mountain, Mich.*

Northern Phalarope in Michigan.—I am glad to be able to record two specimens of this rare bird taken within our limits. In November last, we received from Mr. Albert Hirzel of Forestville, Sanilac County, Michigan, a mounted specimen of a female Northern Phalarope (*Lobipes lobatus*) taken on October 4, 1911, while swimming in Lake Huron near Forestville. At the same time Mr. Hirzel sent us a male bird of the same species taken on October 28, 1911, while running along the beach at the same place. This species was given a place in my 'Michigan Bird Life' on the strength of several more or less definite Michigan records, no one of which, however, was supported by an actual specimen which could be located, in addition to several unquestioned records from adjoining states.

The above specimens seem to establish the bird properly in the Michigan list and they are numbered 9687 (female) and 9688 (male) in the museum catalog of the Michigan Agricultural College, East Lansing.—WALTER B. BARROWS, *Lansing, Mich.*

The Western Goshawk (*Astur atricapillus striatulus* Ridg.), in Iowa.—So far as the writer is aware the Western Goshawk has not been reported hitherto from Iowa. Two Goshawks of this subspecies have come to hand during the past season. The first was secured by Mr. Wesley F. Kubichek of Iowa City, having been shot in Johnson County, Iowa, during the last week in October, 1916. The sex of this specimen was not determined. The second specimen, a female, was shot by Mr. Joseph Shellhorn on his farm near Cedar Rapids, Linn County, Iowa, November 16, 1916. Both of these birds were adult.

Mr. C. B. Cory in his 'Birds of Illinois and Wisconsin,' 1912, p. 460, mentions a specimen taken by Chas. K. Worthen near Warsaw, Illinois. The second of the two above mentioned specimens was submitted to Mr. Cory for confirmatory identification.

The past season has witnessed an unusual flight of Goshawks in Iowa,

no less than thirty-three individuals having been examined, or reported to me by accurate observers in various parts of the State.— B. H. BAILEY,
 Rapids, Iowa.

Chimney Swift Nesting in a Well.— On July 23, 1916, Mr. S. V. LaDow and I hopefully approached a well in an open field between houses along a highroad near Westfield, Bergen Co., N. J. It was a rather fancy well, with a curb about a yard high and four columns supporting a pointed roof, the whole affair of stone. But we found it evidently unused, as the water was about twenty-five feet down, scummy and with no means of drawing it. As we sat on the curb, a strange noise came from below; on repetition, we decided that it was of wings, probably a bat's. Hitting the inside of the well with a stick caused further repetition. Long looking revealed three blind, naked, pink-skinned Swifts (*Chætura pelagica*) in a nest attached to the smooth, rounded concrete wall about seven or eight feet down, and finally an adult (disclosed by the whitish throat) perched a little to one side, also against the concrete. The young wriggled a little and made faint but distinct squeaking. We withdrew and after a few minutes returned and found the old Swift sitting on the nest covering its babies, its face toward the wall.

As after gazing sorrowfully at the water, we had sat quietly for a space before the Swift flew, and as it had not flown upward to any extent as though to escape, perhaps the rather loud noise of the wings in flight was made to scare us away.

Though the file of 'The Auk' contains occasional records of the Chimney Swift's nesting in hollow trees and in buildings, I have found no record there or elsewhere of a nest in a well except in Bendire's 'Life Histories of North American Birds,' 1895, p. 178: "In a letter from Dr. William L. Ralph, dated San Mateo, Florida, May 19, 1895, he says: 'One of my men brought me the eggs of a Chimney Swift that he said he took from a nest attached to the sides of a well, 4 feet below the surface of the ground. He says they often nest in such places in this vicinity.' I consider this as a very unusual nesting site for this species."— CHARLES H. ROGERS, *American Museum of Natural History, New York.*

Muscivora tyrannus (Linn.) in Massachusetts.— On October 22, 1916, I saw a Fork-tailed Flycatcher perched on the top of a wire fence at the side of the main road a short distance below Gay Head Lighthouse, Martha's Vineyard, Mass. When disturbed by my repeated approach, the bird flew only a short distance each time, and returned to the fence. The conspicuously long outer tail-feathers and general coloration made it easily recognizable. Subsequently, by the kindness of Mr. Outram Bangs, of the Museum of Comparative Zoölogy, I have examined specimens of this and other species, which entirely confirm my identification.— FRANCIS A. FOSTER, *Edgartown, Massachusetts.*

Prairie Horned Lark (*Otocoris alpestris praticola*) Nesting at Newbury, Mass.— On August 4, 1908, I discovered this species in a low brood tract, a short distance outside the city limits, locally known as 'Common Pasture.' This is nearly level, clayey, open pasture land extending from the rolling coastal hills on the west, down to the border of the salt-marshes, with an area of about two square miles, a region which I should think was well suited to the tastes and habits of this bird.

On this date I saw a single lark, in company with Vesper Sparrows, along the roadside, and for several days following noted the same bird in about the same locality, mingling freely with the sparrows, or alone.

Each season since 1908 I have found this species in about the same place. During the earlier years I saw rarely more than two or three birds but of late they have increased in numbers. In June, 1915, I found, and frequently saw throughout the remainder of the month and during early July two adults and five immature birds, which would seem to indicate their breeding here.

During the season of 1916, necessary attention to business precluded my searching for more substantial evidence of their breeding. The birds were present however throughout the greater part of the summer and I saw what were probably individuals from this family on one or two occasions in one of the neighboring towns. Apparently they have become regular summer residents.— S. W. BAILEY, *Pittsfield, Mass.*

Starlings Nesting near Washington, D. C.— A pair of Starlings have taken up their abode in a locust tree on my place, eight miles north of Washington, D. C., and at the present date (25th of April, 1917) have young in the nest. I should be very glad to learn if others have noted Starlings nesting this year south of Pennsylvania. In this connection I would add that the male bird utters the notes that sound like a coarser and lower rendering of the Wood Pewee's usual three-note phrase, concerning which there was some comment in 'Bird-Lore' for March-April, 1911. This is the first time I have heard this utterance of the Starling, but from the pitch and quality of the notes I feel no hesitation in venturing the opinion that the phrase is normal with the bird and not an imitation of the Wood Pewee.— HENRY OLDYS, *Silver Spring, Maryland.*

A Pennsylvania Starling Roost.— For some years past an enormous flock of English Starlings has roosted in the evergreens at 'Aldie,' the estate of Mr. William R. Mercer, on the outskirts of Doylestown and during the winter of 1915-16 a number of Purple Grackles associated with them, being 'resident' for the first time within my experience.

The flock of Starlings presents the most interesting bird phenomenon I imagine, since the disappearance of the Passenger Pigeon. My attention was first called to the birds by the late Arthur Chapman, member of the Board of Game Commissioners of Pennsylvania, whose residence farm adjoined 'Aldie.' He estimated that there were a million birds in the

flock, but, while it was impossible to make an accurate estimate of the number, my impression is that Mr. Chapman's figure was far too low. The birds first began to assemble late in December, reached the largest number in January and early February, and from that time began to decrease until about the first of March, when all but a limited number disappeared.

I walked out to 'Aldie' to see this curious sight several times. On January 17, when the flock was as large as it was at any time, I stationed myself at the top of a gentle elevation in the Dublin Pike, about 500 yards from the evergreen roosting place,—a good point for observation. A few minutes after 5 o'clock in the afternoon the birds began to congregate from all directions, most of them coming from the north and west. In small flocks of from 50 to probably 500 they flew past me in rapid succession—flying low until they came to a tree in the open upon which they would alight. I could see the birds alighting upon other trees a quarter of a mile away, in flocks of varying sizes, while Chapman's woods, a large tract of timber, possibly thirty acres in extent, was black with the birds. The notes of many Purple Grackle were heard mingled with those of the Starlings. By 5.20 o'clock the birds grouped themselves in larger flocks and settled on trees nearer their roosting ground. Then, a few minutes later, as the twilight began to deepen, the birds arose, not by any concerted movement, but always in one flock from a tree, and gradually centred in one great flock directly over 'Aldie'—the flock soon becoming compact and deep and stretching out over an area of several acres. The writhing, twisting mass performed many curious evolutions and gyrations. At first the bird mass resembled very much a vast rolling black cloud, driven before a thunder-gust, the edges curling and overlapping and then broadening out. The individual birds on the outer edges of the flock could be distinguished, but it was the mass effect that was impressive. The whir of the countless wings was like the sound of distant wind or the roar of a waterfall. It was such an unusual sound that the horse driven by a farmer, who halted his team to talk with me, became frightened and so nervous that he was obliged to drive away. Gradually the cloud-like formation changed to funnel-shape, resembling nothing so much as a cyclone cloud and the change was made with a sound resembling that produced by a cyclone's sweep. Then the cloud-like mass changed again and lined up in plane formation, with a straight front like an army in battle array for a final charge. This line moved directly towards me overhead. Strangely enough, a line of Purple Grackles was in the forefront of the army, their larger size and darker color making them conspicuous. In fact the Grackles seemed to endeavor to keep on the outer edge of the mass as much as possible, and they were noticeable because they had difficulty in falling in with the rolling and more graceful flight-gyrations of their more numerous companions, the Starlings.

Frequently the whole vast flock made sharp turns, and as they did so it was with a sound that was audible for a long distance, somewhat like

the crack of a gigantic whip, only deeper, mellower and more voluminous. These evolutions were continued for fully ten minutes, when the vast flock began to settle into the evergreens for the night somewhat after the manner of Chimney Swifts dropping into a chimney. Then something, perhaps a hawk or a squirrel, would disturb them after nearly all the birds had secured a perch, and with a roar that was really awe-inspiring the whole flock would again take flight, circle over the trees for a few moments and again alight. This performance was repeated perhaps half a dozen times by all or a part of the flock until, just at dusk, they settled into the trees to rise no more that night. But they kept up an incessant chatter resembling the sound made by a locomotive in the distance blowing off steam, and it was long after dark, before this sound wholly died out. People interested in bird study came long distances to witness this sight.

It is possible this flock of Starlings may have been the cause of the Purple Grackle remaining here all winter. The weather was mild down to February 1. They did not seem to suffer for food until then. They associated with the Starlings until well into February, when they seemed inclined to flock by themselves. February, with its snow and low temperatures, alternating with warmer conditions, was rather hard on them, but a great deal of food was put out for them by people of the town, and they weathered the month out pretty well. Indeed, they seemed to suffer more from the bad weather which prevailed after the usual date of their arrival here from the south than they did prior to that time.

William R. Mercer, Jr., who resides at 'Aldie,' informed me that in the middle of January, following a snowstorm, he found thirty dead Purple Grackles and two or three dead Starlings at the roosting place. He estimated the total dead Purple Grackles there for the entire winter at about 40. The excrement from the roosting flock was in such quantity that it was hauled away in carts and was sufficient to fertilize a considerable area of ground.—GEO. MACREYNOLDS, *Doylestown, Pa.*

Evening Grosbeak at Birdsboro, Pa.—I would like to report the presence of a male Evening Grosbeak on the Brooke Estate, Birdsboro, Berks Co., Pa., on April 15, 1917. On April 22, accompanied by a party of students, I again saw what was apparently the same bird at the same place.—G. HENRY MENGEL, *Reading, Pa.*

The San Lucas Sparrow (*Passerculus rostratus guttatus*) in California.—Among some sparrows collected by the writer and sent to the U. S. National Museum are nineteen skins of this subspecies, a form not hitherto recorded from California. One male was obtained at Anaheim Landing, Orange County, Oct. 5, 1916, and eighteen skins, of both sexes, were collected at Sunset Beach, Orange County, between November 13, 1916, and January 31, 1917. A few examples of true *P. r. rostratus* were collected with them. The birds were identified by Mr. H. C. Oberholser.—EDWARD J. BROWN, *Los Angeles, Cal.*

Nelson's Sparrow in Vermont.—While watching the fall migration of sparrows on October 8, 1916, Mr. George H. Ross and the writer collected two adult male specimens of *Passerherbulus nelsoni nelsoni*. These are the first records for this bird in Vermont as far as the writer can ascertain. The birds were obtained in sedges in the wettest parts of swampy meadows adjacent to Otter Creek which runs from the Green Mountains into Lake Champlain. One of the birds was taken in Rutland and the other in Clarendon, about three miles apart. They were not in company of any other birds.—GEORGE L. KIRK, *Rutland, Vt.*

Bohemian Waxwing (*Bombycilla garrula*) in Colorado.¹—The occurrence of this sub-arctic species in Colorado is always at irregular intervals and in varying numbers, so it is with pleasure that I place on record what has unquestionably been the largest flight in the history of Colorado ornithology.

The birds were first reported by Dr. W. H. Bergtold on February 22, a large flock having been seen, although at that time, the doctor was not sure of their identity; simply noting them as "a large flock of strange birds." In view of the developments of the next few days, however, there seems but little doubt that they were of this form.

They were first seen by the writer on the 26th; a flock of at least 200, observed in the Clear Creek valley between Denver and Golden, from which a number of specimens were secured. On the next day (the 27th) flocks began to appear around the Colorado Museum of Natural History in City Park, Denver. These were continually augmented until hundreds, if not thousands, were gathered in this area. Reports of their presence then began to come in from other parts of the city, some even from the business section, while the orchards and neighboring foothills were literally alive with them.

It was, of course, impossible to form an accurate estimate of their numbers, but one, which I consider conservative, put ten thousand birds within the corporate limits of Denver. All the parks contained large flocks, bunches of variable numbers were seen in all parts of the residence sections, and they were even noted from the office buildings in the business section.

The last occurrence of this species was during a corresponding season in 1908, when flocks of several hundred were observed by the writer and others, in the South Platte and Clear Creek valleys, over a period of about six weeks.—F. C. LINCOLN, *Denver, Colo.*

Regurgitation in the Bohemian Waxwing.—While studying this species during its present remarkable visitation to Denver, Colo., and its environs detailed elsewhere by Mr. F. C. Lincoln, I was struck by a curious regurgitation habit of the birds. It was first noticed while I was watching

¹ Through the co-operation of Dr. W. H. Bergtold, his extensive notes of this occurrence have been at my disposal, and are here included.—F. C. L.

a flock in Cheesman Park, where the birds were feeding on 'Russian Olives' and snow. After apparently becoming satisfied with food and snow, the birds would rest for a while in the trees, and then suddenly forcibly regurgitate a large quantity of clear fluid, which when it fell upon the snow, deposited undigested seeds. The same habit was noticed with a number of captive waxwings, which I was able to watch through the courtesy of Director J. D. Figgins of the Colorado Museum of Natural History (Denver).

It is highly probable that this queer habit of the Bohemian Waxwing has been spoken of before now; unfortunately I do not have access to avicultural magazines, or to such works as 'Bird Life in Sweden,' where it probably is on record, and hence I am now risking a duplication of a well known fact.—W. H. BERGTOLD, *Denver, Colo.*

Orange-crowned Warbler (*Vermivora celata celata*) in Cohasset, Mass.—On December 8, 14, 26, and 31, 1916, and January 9, 1917, I saw a single Orange-crowned Warbler, *Vermivora celata celata* in Cohasset, Mass. This is, as far as I know, the first specimen reported from this town, which is about twenty miles southeast of Boston, on the coast.

In each case it was with Black-capped Chickadees, with Myrtle Warblers near, and usually Hudsonian Chickadees, and Golden-crowned Kinglets. It was usually in small cedars, near the ground.

One point in Mr. Wright's paper in the January 'Auk' is of especial interest in relation to my own experience. He quotes Mr. Wayne as saying that the Orange-crown "never displays its crown patch while here in winter or early spring" and Mr. Wm. Brewster as saying that he has never seen the concealed crown patch shown by a living bird.

My first view of the bird was while observing, at about twenty feet, a Brown-capped Chickadee in a small cedar. (I think these birds are referable to *Penthestes hudsonicus hudsonicus* rather than *P. h. littoralis*, this winter.) Into my field came a yellowish green bird, which showed distinctly a reddish brown crown patch. In a moment it was gone to shrubbery near by and though I flushed it some half dozen times, I did not again see it at rest. The glimpse of the crown was only momentary, as the bird swung over on its side, showing the entire back but no underparts, but the impression of the reddish crown was very distinct.

On December 8 I had one brief glimpse of the bird in flight.

December 26 I had an excellent study of the bird, in a small scrub oak, under very good light conditions. The streaky breast was seen for the first time. On the 31st, with Mr. Chas. B. Floyd, I had another excellent study. This time the bird was in company with Black-capped Chickadees, Tree Sparrows, Purple Finches, Myrtle Warblers, and a Downy Woodpecker.

Today, January 9, I heard its call note for the first time, very different from the calls of the Myrtle Warbler, louder, clearer, and of different quality.—JOHN B. MAY, *Cohasset, Mass.*

The Cape May Warbler at Washington, D. C., in Winter.—An adult female *Dendroica tigrina* was brought to the Division of Birds, National Museum, on December 16, 1916, by Mr. R. M. Brown, librarian of the Coast and Geodetic Survey, who had found it outside the window of his office at about 11 A. M. The weather was cold (temp. 13° F. at 8 A. M.) and the earth covered with snow, and the bird had probably had difficulty in securing food. It was, however, fairly active, and an effort was made to keep it alive. It fed eagerly on ripe banana, and seemed in condition to outlive its experience, but was found dead the next morning.

As an unusual coincidence, it is recalled that the only other winter record for this species in the vicinity of Washington is that of a male, collected on December 16, 1888, by Mr. J. D. Figgins.—CHAS. W. RICHMOND, *Washington, D. C.*

Kirtland's Warbler in Madison, Wisconsin.—On the afternoon of May 19, 1917, my wife and I while on an observing trip had the good fortune to come upon a female Kirtland's Warbler. For almost three quarters of an hour we subjected it to the closest inspection, often within an arm's length of it. It was tame to the point of idiocy, and during the last fifteen minutes of our intimacy almost paid the 'last full measure for its trust.' For in the absence of my collecting gun—a friend had borrowed it for the day—I assailed it from every point of the compass. There is no definite Wisconsin record for this warbler. The nearest approach goes back to 1893 when a supposed specimen was wounded, only to escape under a brush-pile—as recorded in Kumlien and Hollister's 'Birds of Wisconsin.' The present specimen was scrutinized painstakingly from bill to toe and found to correspond accurately with published descriptions save that the black streaks on the crown were very faint; and that the patches on the inner webs of the tail-tips were dull gray rather than white, and like the crown marks not readily apparent. The tail-dipping was more incessant and deeper than that of the Palm Warbler. During the period of our inspection the bird never mounted higher than fifteen feet and preferred a plane within three feet of the ground.—WARNER TAYLOR, *Madison, Wisc.*

Yellow-throated Warbler in Brooklyn, N. Y.—On the morning of April 29, 1917, while walking through Prospect Park, Brooklyn, I was attracted by a loud ringing song quite strange to me, though somewhat suggestive of that of the Indigo Bunting. I easily located the singer in some low maple trees on the bank between the Rose Garden and Flatbush Ave. In its actions the bird was very deliberate, strikingly different from most members of its family in this respect. I was able to approach within a few feet as it was so tame or perhaps exhausted from its unusual journey, and I was thus able to identify it at my leisure.

I could see no trace of yellow in the line in front of the eye which would indicate that the individual belonged to the western race known as the

Sycamore Warbler, but as the amount of yellow is variable and the geographical probability is in favor of the Yellow-throated Warbler I leave the subspecific identification open. This is in all probability the same bird seen by Mr. Fleisher (Bird-Lore, 1917, p. 150) on the day previous and identified as the eastern subspecies. Later in the day I again saw the bird, in company with Mr. Preston R. Bassett. It was not singing on this occasion but was still so tame and deliberate in its movements that it was easily studied. Since then on subsequent visits to the same locality I have been unable to find any trace of the bird.—RALPH M. HARRINGTON, *Brooklyn, N. Y.*

Canada Warbler (*Wilsonia canadensis*) Nesting in Southern Connecticut.—On June 3, 1917, I was rewarded by finding a nest of this species at Hadlyme, New London County, Connecticut.

The female was flushed from its nest nearly under my feet.

The nest was near a large stream of water, not more than thirty feet away and in one of the most impenetrable places thickly covered with laurel bushes.

The nest was at the foot of a laurel bush, sunken level with the surface and composed of dry leaves, bark strips and lined with fine rootlets and grasses, etc. The ground was well carpeted with dry leaves.

The male could be heard singing most any time during the day on the wooded hillsides. While its mate was nesting in the low ravine below, some distance away. The male was never seen near the nest.

These birds have apparently nested in this vicinity for at least three summers arriving about May 5 and not leaving until September when most of our summer resident warblers have left.—ARTHUR W. BROCKWAY, *Hadlyme, Conn.*

The Hudsonian Chickadee (*Penthestes hudsonicus*, subsp.?) in Lycoming County, Pa.—On March 18, 1917, one of these birds was seen feeding with a single Black-capped Chickadee in some underbrush at the side of a road in a gap through the mountains, some fifteen miles east of Lock Haven, Pa. It happened that I was sitting on a log by the roadside when I noticed a small bird in a thicket near me and as I gazed at it, it hopped into plain view and showed itself to be a Hudsonian Chickadee. What first caught my eye was the splash of umber on its sides and the next instant the brownish gray head it turned toward me as it peered about for insects made me realize that there could be no doubt as to what it was. For fully half an hour I followed it about as it fed on or near the ground and I was interested to see how wren-like its actions were as it crept about logs and piles of brush. To my mind, it showed none of the nervous activity that I have always associated with our common Chickadee for it seemed rather deliberate in its actions. For the most part it was silent although it occasionally gave a feeble chirp and twice uttered a nasal "chick-a-dee-dee-dee" that was quite distinct from

that of its rather noisy companion. This is, as far as I can find, the farthest south that one of this species has ever been recorded, and is also the first record for the state of Pennsylvania.—THOS. D. BURLEIGH, *State College, Pa.*

Hudsonian Chickadee on Long Island.—The Hudsonian Chickadee (*Penthestes hudsonicus*) has appeared,—as was expected in this season of its unwonted southward flight,—upon Long Island.

On December 2, 1916, at Roslyn, Long Island, I was out searching for birds with Ogden Phipps, the eight-year-old son of Mr. and Mrs. Henry C. Phipps. We had heard Kinglets lispings in a patch of planted evergreens bordering a private roadway, and I was 'squeaking' with my lips to call them. What came was a brown-capped Chickadee. He sat on the outer twigs of a small blue spruce, about four feet above the ground and less than four yards from where we stood. We saw him well, as he fidgeted about in various postures, inspecting us, for several seconds. He did not make a sound, however, and after he had dodged back into the evergreen thicket, we could not find him again.

Immediately afterwards, though, we saw a White-winged Crossbill, which I understand is a rarity on Long Island and not recently recorded. This bird, a very dingy red (probably immature) male, perched in a treetop in a deciduous wood near by, making his 'bleating' call-note, and then flew, twittering, down to the evergreens where the Tit had been, and we watched him at almost as close range as we had watched the Tit. Both species are birds with which I am very familiar. The spot where these two appeared is on the estate of Mr. S. Mortimer, close to Mr. H. P. Whitney's land.

On Saturday, December 16, the morning after the big snowstorm, several of us made a long search, both in the same tract of evergreens and in neighboring tracts, but we found neither Tit nor Crossbill. Out party consisted of Messrs. Nichols and Griscom from the American Museum of Natural History, Ogden Phipps, and myself. We saw a Siskin, three Robins, several Juncos, and, in a hardwood tract, a lively gathering of Kinglets, Creepers, Nuthatches (both kinds) and a Downy Woodpecker. This seemed a likely company for the rare Tit, but we could not spot him. It was a bleak day and the birds were restless and not very talkative.—GERALD H. THAYER, *Monadnock, N. H.*

RECENT LITERATURE.

Wayne's 'A List of Avian Species for which the Type Locality is South Carolina.'— This list ¹ numbers 76 species, of which 52 were based solely or primarily on Catesby and 4 others in part on this author. It is interesting to note that 58 were named by Linnæus in his 'Systema Naturæ' (43 in the 10th edition and 15 in the 12th edition), 7 by Audubon, and the remaining 18 by various European authors, including 5 by Gmelin.

On comparing Mr. Wayne's list with the A. O. U. Check-List (1910) edition) the type localities given by Wayne agree in 54 cases with those of the Check-List; in most of the others the Check-List localities differ from Wayne's in being less definite, in several instances the range of the species as assigned by the original author being given instead of definite type localities. As in most of these cases Catesby is the most important reference cited by the original author, and evidently the one on which he mainly based his species, Mr. Wayne seems fully justified in giving in these instances the type locality as Carolina. In place of "North America," "eastern North America," "Carolina to New England," "eastern United States," "Virginia or Carolina," etc., Mr. Wayne substitutes Carolina.

In his introduction to the list Mr. Wayne refers at length to Catesby's great work, through which so many North American birds came to be described from "Carolina." He says: "It should be explained that although Catesby's book treats of Florida (the part now known as Georgia) and the Bahama Islands, as well as of Carolina, he devoted his time in Carolina to the study of birds and plants, while in the Bahama Islands he studied fishes. Nearly all his birds, therefore, are described from Carolina. . . .

"Although the province of Carolina originally included what is now both North and South Carolina, it is clear that Catesby's work was confined exclusively to the latter. His own description of his travels gives no indication of work beyond the borders of South Carolina. Furthermore, at the time Catesby wrote, the term Carolina was used to refer to South Carolina."

The Nonpareil (*Passerina ciris*) is not included in his list, but he states there is reason to believe that it "may be credited to South Carolina with as much propriety as to Vera Cruz, which is the type locality usually assigned." As Catesby described and figured the species, and his description is cited by Linnæus, it seems reasonable to definitely assign South Carolina to this species as its type locality.— J. A. A.

¹ A List of Avian Species for which the Type Locality is South Carolina. By Arthur Trezevant Wayne, Honorary Curator of Ornithology in the Charleston Museum. Contributions from the Charleston Museum, III, pp. i-vi, 1-8. Charleston, S. C., 1917.

Chapin on the Classification of the Weaver-Birds.¹—This notable paper is another result of Mr. Chapin's studies while a member of the American Museum's Congo Expedition, 1909–1915. The weaver-birds constitute the commonest family of African birds and no less than eighty-two forms were collected by the expedition so that Mr. Chapin had abundant opportunity to study them. He was early impressed by the similarity in nesting habits in species usually arranged in different sub-families, and subsequently a study of the curious markings within the mouths of the young, pointed to like relationships. A thorough study of the family after his return convinced him that the extent of development of the tenth primary which had generally been used as a sole criterion for the separation of the two subfamilies 'Ploceinæ' and 'Estrildinæ' was not a reliable character, when it failed to accord with those above mentioned, while the association of all the long-tailed species of the family was not a natural arrangement as some of them were obviously true 'weavers' (Ploceinæ) and not 'weaver-finches' (Estrildinæ). This latter fact had long been suspected by the reviewer and doubtless by others.

Mr. Chapin's investigations however did not stop here and in studying the relationships of the outlying genera he discovered that *Textor* possesses such striking structural peculiarities that it must be regarded as constituting a distinct family, *Dinemillia* and perhaps some other genera being probably associated with it. The skull of *Textor* differs from those of all other weavers examined in having the fenestræ associated with the orbital foramina different in form and number, and in the presence of an oblique ascending median bar. The sternum however exhibits the most remarkable peculiarity, as pointed out to the author by Mr. W. DeW. Miller, in the presence of a *spina interna*, the first recorded occurrence of this process in any passerine bird.

Parmoptila a genus which has been shifted about from the Sylviidæ to the Dicæidæ and Paridæ was suspected of being a weaver-finch by Mr. Chapin, and a subsequent examination of the young discovered the curious mouth markings almost as in *Nigrita*, while the character of the nest as described by Bates agrees with those of the weaver-finches.

Philetairus in all its structural features is apparently a finch and has been so considered by some authors, but its remarkable nest is so unlike those of the finches and so distinctly Ploceine, that Mr. Chapin prefers to keep it among the Weavers in spite of the extreme reduction in the tenth primary. We find all gradations in the size of this feather among the weavers and *Philetairus* may well be regarded as the culmination of the series, being the only genus to have reached the 'nine primaried' condition which is normal in the Fringillidæ.

Mr. Chapin's final arrangement differs from those of recent authors in the recognition of a distinct family, Textoridæ, for *Textor* and *Dinemellia*;

¹ The Classification of the Weaver-Birds. By James P. Chapin. Bull. Amer. Mus. Nat. Hist., Vol. XXXVII, Art. IX, pp. 243–280. May 8, 1917.

in the rejection of the 'Viduinæ' either as a subfamily or a group and in the transference of *Spermospiza* from the Ploceinæ to the Estrildinæ (= Spermestinæ) and of *Quelea*, *Pyromelana*, *Euplectes*, *Urobrachya*, *Coliuspasser*, *Diatropura*, *Drepanoplectes*, and *Pseudonigrita* from the latter to the former. *Parmoptila* and *Pholidornis* are added to the Estrildinæ while *Philetairus* and *Anomalospiza* are retained in the same group.

An appendix contains brief accounts of the nest and eggs, and size of the outer primary in each genus, and in the Estrildinæ the mouth markings of the young as well. These are based upon Mr. Chapin's personal observations and the published accounts of others. A number of half-tone plates showing photographs of nests and drawings of the mouths of young birds complete this valuable paper which is one of the most important contributions to avian taxonomy that has appeared in America for some time.—W. S.

Pearson's 'The Bird Study Book.'¹—Realizing from his own wide experience the many questions that beginners in bird study are constantly asking of those who are more advanced in the subject, Mr. Pearson conceived the idea of embodying in book form such information as would serve as answers to these queries, and the work before us represents the result of his efforts. He begins with general instructions as to the best ways to become familiar with wild birds, following with a discussion of the structure of birds' nests, their variability and where to look for them, and then an account of the domestic life of birds. The migration of birds and birds in winter very properly form the subjects of two separate chapters, as these are perhaps the two most popular topics in outdoor bird study.

All of this naturally leads up to that phase of the subject with which Mr. Pearson is especially identified—the protection of birds, to which all students of outdoor life will sooner or later be attracted. Chapters on the economic value of birds; the bird supply; the traffic in feathers; bird protective laws; bird reservations; bird sanctuaries and the teaching of bird study follow in natural order.

The work is admittedly intended primarily for the beginner, and the author seems to have been most happy in the character of the information which he has collected and in the manner of its presentation. 'The Bird Study Book' will give just the information that many persons are seeking, while the later chapters will give many more or less advanced field students an intelligent idea of the problem of bird protection and what has been accomplished towards its solution, thereby forestalling much well intended but misdirected effort.

Mr. Pearson has included many original incidents and ideas in his

¹The Bird Study Book. By T. Gilbert Pearson, Secretary, National Association of Audubon Societies. Colored Frontispiece. Pen and Ink Drawings by Will Simmons and sixteen Photographs. Doubleday, Page & Company, Garden City, New York. 1917. 8vo, pp. i-xv, 1-258. Price \$1.25 net.

various chapters and the book will well repay a careful perusal by all concerned with bird conservation. One point is especially worthy of consideration by game commissioners, who in spite of the evidence in favor of most hawks and owls are still inclined to recommend their unlimited slaughter, along with all other vermin, on game preserves, on account of their destruction of a certain number of game birds. Mr. Pearson cites a case in which such slaughter was carried on most thoroughly for the sake of protecting a large preserve of English Pheasants. The birds were later almost wiped out by disease and he says: "Is it going too far to say that the gunmen and trappers had over done their work? So few Hawks or Owls or foxes had been left to capture the birds first afflicted, that these had been permitted to associate with their kind and to pass on weakness and disease to their offspring until the general health tone of the whole Pheasant community had become lowered." All animals, as Mr. Pearson says, "have their part to play in the great economy of the earth, and it is a dangerous experiment to upset the balance of Nature."—W. S.

Henshaw and Fuertes on North American Warblers.¹—The interest in this publication centers about the thirty-two Warbler pictures in colors reproduced from paintings by Louis Agassiz Fuertes. We have several times had occasion to congratulate the 'National Geographic Magazine' upon the splendid educational work that it is doing, in the publication of these colored pictures illustrating various branches of natural history, and once again we express our appreciation. The present pictures are larger than the former bird series, each one being half, instead of one third the height of the page and this of course presents the work of the artist to much better advantage. Mr. Fuertes has published warbler portraits before, notably the series in 'Bird-Lore' which appeared later in Chapman's 'Warblers' and those in Eaton's 'Birds of New York,' but we think the present figures are better than either, and they will give pleasure to thousands of bird students to whom the warblers are always the favorite group for study. Mr. H. W. Henshaw has written a descriptive text in which are embodied many interesting personal experiences of this veteran ornithologist, while the introductory pages discuss the relationship, migration and economic value of these interesting little birds, while frequent references to the publications of the U. S. Biological Survey enable the reader to follow up the subject at his pleasure.

The only flaw in this admirable publication is the caption to a half tone illustration from Chapman's 'Camps and Cruises,' which is used to fill out p. 303. It depicts an interesting family of young Blue Jays under which has been placed, without the authority of either Mr. Henshaw or Mr. Fuertes, we are sure, the following inscription: "Young Fish-Hawks about to Leave their Nest"!—W. S.

¹ Friends of Our Forests. By Henry W. Henshaw. Illustrations by Louis Agassiz Fuertes. National Geographic Magazine, April, 1917. pp. 297-321.

Mrs. Bailey's 'Handbook of Birds of the Western United States.'¹

—The popularity of Mrs. Bailey's standard work on the birds of our western states is attested by the fact that a seventh revised edition has just been published by the Riverside Press. Since the appearance of the fourth edition, which was noticed in these columns in January, 1915, additions appear in the list of species to be added, while the list of proposed changes in the A. O. U. Check-List published in 'The Auk' for October, 1916, are printed in so far as they apply to western birds. The 'List of Birds of the Western United States in the Nomenclature of the 1910 Check-List' now appears under the caption 'Revised Ranges of Western Birds,' and contains additional matter. There are also many additional titles in the supplement to the list of 'Books of Reference.'

All of these additions tend to bring the work up to date and give us the very latest information on the birds of the west, a region in which bird students are increasing at a wonderful rate, while its avifauna is steadily becoming of greater interest to eastern bird students owing to the increasing travel in the west during recent years.—W. S.

Dr. Casey A. Wood on the Fundus Oculi of Birds.²

—There are many points in the anatomy and physiology of birds upon which the ornithologist needs light but which he finds himself unfitted to investigate because of his lack of technical training in these special lines of research. This is of course perfectly natural as ornithology like any other branch of systematic zoölogy is so broad a subject and so intricately related to various special lines of investigation that no one man could possibly speak authoritatively upon all its aspects. It is fortunate therefore that specialists upon anatomy, physiology, etc., who lay no claim to being ornithologists, are willing from time to time to give us the benefit of their special training, and to elaborate the particular line of research to which they have devoted their lives, in its relationship to ornithology.

In studying the systematic relationship of any group of birds or the behaviour of a certain species, the ornithologist may have occasion to consider the power of hearing or sight, but without the special or technical training possessed by the medical practitioner who has specialized upon these subjects his deductions are likely to be faulty if not absolutely absurd. With the results of the specialists' researches before him however, he can make use of data on these topics without danger of error.

One special work of the kind we have in mind which might be mentioned

¹ Handbook of Birds of the Western United States. Seventh edition, revised. Houghton and Mifflin, Boston and New York, 1917. Price \$3.50 net.

² The Fundus Oculi of Birds Especially as viewed by the Ophthalmoscope. A Study in Comparative Anatomy and Physiology. By Casey Albert Wood. Illustrated by 145 drawings in the text; also by sixty-one colored paintings prepared for this work by Arthur W. Head, F. Z. S. London. Chicago, Lakeside Press. 1917. 4to, pp. 1-181. Price, until March 15, \$12.50. After that date \$15. H. A. Fox, publisher, Chicago Savings Bank Bldg., State and Madison Sts., Chicago, Ill.

in this connection as it does not seem to have ever been noticed in 'The Auk' is Reichert and Brown's monograph¹ on hemoglobin crystals in which the structure of these crystals in the blood of various birds as well as other vertebrates is discussed and its weight as a taxonomic character considered.

Another work of the same class is Dr. Wood's beautiful monograph on the eyes of birds which is now before us. This work deals mainly with the fundus oculi, or the back part of the eye, as viewed through the pupil by means of the ophthalmoscope, and presents in the main observations of the eyes of living birds, although studies have also been made of prepared specimens of birds' eyes and of eyes of birds recently dead as well as microscopic studies of the tissues.

The topics considered in the various chapters may be outlined as follows: A review of the anatomy and physiology of the organs and tissue seen in the fundus oculi; explanation of the ophthalmoscope and its use; study of the fundus of living birds through the ophthalmoscope,—the eye-ground, pecten, areas of acute vision, etc.; study of the fundus in prepared specimens; effect of domestication on the fundus oculi of wild birds; the appearance of the fundus in the various orders of birds; the ocular fundus in relation to a classification of birds; relation of reptilian to avian fundi. The work is illustrated by sixty-one beautifully prepared color plates from paintings by Mr. A. W. Head, of the fundi of various species of birds, as well as numerous outline cuts in the text.

Birds according to Dr. Wood possess the most highly developed vision of any of the classes of vertebrates. They exhibit several different foveæ or areas of acute vision, some concerned only with monocular vision, others with binocular. "Birds with double foveæ", says Dr. Wood, "have exceptionally good eyesight with each eye separately; they are by this effective combination, enabled not only to command a view of the highest efficiency over the whole horizon, but also have the power to concentrate it when needed upon particular objects invisible or indistinctly visible to other species not so provided." But he adds "only when the histology, pathology, and experimental physiology of the avian cerebral organs and their connections have been worked out, as they have been in man, shall we know how the paths pursued by 'brain currents' involved in this switching from monocular single vision to binocular sight, run and are controlled."

Dr. Wood shows that there are six different arrangements of the areas of acute vision which seem to correspond quite closely with the habits of the birds, the gallinaceous birds all coming under one head, the owls under another and the terns and swallows under a third.

In the last chapters of the work he describes and figures in detail the structure of the fundus, the location of the areas of acute vision and the shape of the pecten, in a large number of species representing practically

¹ Crystallography of Hemoglobins. Publ. 116, Carnegie Inst., Washington, D. C., 1909.

all the principal types of birds, and indicates the possibilities of using characters drawn from these structures in the systematic arrangement of the class Aves.

Dr. Wood is to be congratulated upon his success in securing such a representative lot of material and such splendid results — a task which must have required much time and patience, as well as upon providing for ornithologists a work of reference on a subject upon which very few have had any accurate knowledge. The value of Dr. Wood's researches to ophthalmology must also be very great and his work furnishes another instance of the praiseworthy tendency of modern medical research to carry investigation beyond the human subject through the lower types of vertebrates.

The publishers have done their part of the work well and both plates and text are beautifully printed. The only regrettable feature is the lack of an index which would have enabled the reader to bring together scattered information dealing with single topics.— W. S.

Mathews' 'The Birds of Australia.'¹—Two thick parts of Mr. Mathews' great work have appeared since the last notice in these columns. While the paper and typography remain fully up to the high standard that the publishers have set, we think that some of the recent plates are not equal to those of the early numbers. The parrots which furnish the subject matter of these last two parts present a gorgeous array of species and the plates are among the most brilliantly colored of any that the work will contain.

The text is very full and as usual is devoted largely to a discussion of questions of nomenclature and taxonomy. We feel sometimes that the author would have made his points clearer if he had condensed his discussion, for in his praiseworthy efforts to present all the evidence to the reader, he has reprinted large sections from his previous publications which sometimes tend to confuse, especially when double sets of quotation marks are used as on page 234, where it looks at first sight as if some of the quoted "subsp. n." appeared here for the first time.

The accounts of the various species are based upon the observations of Mr. Mathews' correspondents in Australia as well as upon published accounts and appear to bring the subject fully up to date. The frequent allusions to former abundance and present day scarcity among these splendid birds will be read with regret by all who peruse Mr. Mathews' pages.

As to matters of nomenclature, those who enjoy delving into puzzling problems will find plenty to occupy their attention in the parts before us. The discussion under the genus *Kakatoë* is particularly interesting. The A. O. U. Committee on Nomenclature some years ago adopted certain

¹ The Birds of Australia. By Gregory M. Mathews. Vol. VI. Part II, February 6, 1917. Part III, April 17, 1917.

generic names from Cuvier's 'Lecons d'Anat. Compt.,' 1800. This action has lately been endorsed by the International Commission which necessitates the recognition of certain other names from the same source which do not figure in North American ornithology, and which had therefore not been taken up by the A. O. U. Committee. Among these is *Kakatoë* the type of which Mr. Mathews fixes as *Psittacus galeritus* Lath., and which he adopts in place of the later *Cacatoës* of Dumeril which he had previously used and for which he had selected the same species as type. Recently he has discovered that Froriep years before had selected as the type of *Cacatoës*, *Psittacus cristatus* a species which some authors have considered unrecognizable. Now if these two generic names are regarded as simply different spellings of the same word the question arises whether Froriep's designation of a type for the later one does not force us to accept the same type for the earlier one; in which case both may have to be rejected as based upon an unidentifiable species. Mr. Mathews thinks not, and we agree with him, but in order that the group, to which *galeritus* belongs will be sure to have a name he proposes *Eucacatua* for it, with the rather unique remark: "My name will become a synonym if my conclusions be accepted, but will come into use if they are rejected" !

Another of these early Cuvierian names is *Psittacula* which as used in the 'Lecons' has for its type '*Palæornis*' *alexandri*. *Conurus*, as has been pointed out for some time, must also be applied to the same group and being of earlier date than *Palæornis* has been used in place of it by some recent authors. Now however, we have the still earlier *Psittacula*, which as Mr. Mathews points out, must be employed for these birds, while the group for which it was formerly used will be known as *Forpus* Boie 1858. Mr. Mathews has made one change to which especial attention might be called, i. e. the name *Callocephalon* which has been variously emended into *Callicephalus*, *Callocephalum* etc., is rejected on account of an earlier *Calocephalus*. While we think that this is in accord with the A. O. U. Code we have been unable to find that the International Commission has as yet taken any action on the vital question of the status of emendations and variant spellings. We therefore are at a loss to understand Mr. Mathews' statement; "The International Commission have decided upon the item, 'errors of transliteration' in the recognition of their amendment." Has he not confused proposed amendments with those actually adopted?

Among the several questions of taxonomy that are discussed in the present installments of the work is one regarding the status of the genus *Ducorpsius*. According to Mr. Mathews it is exactly like *Licmetis* in every detail of structure and coloration, except for the longer bill of the latter, and he therefore thinks that the two should be united.

The difference in the bill, if constant, might easily we think be sufficient ground for generic separation but a far more important argument for uniting the two is found in the text under *Licmetis tenuirostris*, i. e. the admission that a race referred by Mr. Mathews to *Ducorpsius sanguineus*, "might be almost as well classed as a subspecies of *Licmetis tenuirostris*."

This seems to show that the relative size of the bill is not a constant difference.

We had occasion to criticise the brevity of some of Mr. Mathews' diagnoses in former parts of his work, and the general lack of measurements. He says in reply to this criticism (p. 148) "if I gave pages of measurements, as is the custom of my American friends, it would not prejudice any worker in favor of my subspecific forms," and adds, "the work [of measuring] must be done, but the results only are necessary, not the methods whereby the results were achieved." Mr. Mathews seem to have misunderstood our criticism. We did not demand all the individual measurements, we quite agree with him on that point. What we did demand were measurements of *some* sort, either averages or those of a typical individual, in all cases where relative size is taken as the basis for subspecific differentiation. In the present numbers of the work there are a gratifying number of measurements.

The following new forms are proposed in the two parts before us. In Part II: *Calyptorhynchus banksii samueli* (p. 120), Cent. Austr.; *Callocorydon fimbriatus superior* (p. 158), N. S. Wales; *Kakatoë galerita interjecta* (p. 184), Victoria; *K. g. aruensis* (p. 187), Aru Isl.; *Lophochroa leadbeateri superflua* (p. 196), S. Australia; *Ducorpsius sanguineus westralensis* (p. 211), Mid-west Australia; *D. s. normantoni* (p. 211), Queensland.

Also the following new genera: *Callocorydon* (p. 150), type *Psittacus fimbriatus* Grant. *Eucacatua* (p. 169), type *Psittacus galeritus* Lath.

In Part III: *Eolophus roseicapillus howei* (p. 234), Victoria; and the new genus *Layardella* (p. 289), type *Psittacus tabuensis*. This takes the place of *Pyrrhulopsis* Reich. which is based upon an unidentifiable figure of the head of a parrot.—W. S.

Matthew and Granger on Diatryma.¹—Mr. William Stein of the American Museum's Paleontological Expedition of 1916, was fortunate enough to discover a nearly complete skeleton of this remarkable bird previously known only from a few fragments obtained by Prof. E. D. Cope in 1874, in the Wasatch formation of New Mexico, and some others obtained in the Eocene of Wyoming, in 1911, by Mr. Granger. A single toe bone from the Eocene of New Jersey described by Prof. Marsh as *Barornis regens* has been referred to the genus by Dr. Shufeldt, but is regarded by the present authors as "practically indeterminate."

For the first time therefore we are able to determine what this extinct bird looked like and what are its relationships. It was about seven feet in height, ground-living, with vestigial wings, and with a shoulder girdle remarkably like that of the Cassowary. The resemblance to the Ratite birds is however considered by the authors to be due to parallelism and

¹ The Skeleton of *Diatryma*, a Gigantic Bird from the Lower Eocene of Wyoming. By W. D. Matthew and Walter Granger. Bull. Amer. Mus. Nat. Hist., Vol. XXXVII, Art. XI, pp. 307-326. May 28, 1917.

Diatryma is to be regarded as a primitive Carinate form most nearly related to *Cariama* among existing birds, although it was probably only an early offshoot from the line of which *Cariama* is the sole survivor, and not intimately related to it. It had an enormous skull measuring seventeen inches in length consisting mainly of a huge compressed beak. In this character it resembles the extinct *Phororhachos* of the South American Miocene but there the resemblance apparently stops.

Fossil birds as we know are extremely rare and the authors regard the discovery of the skeleton of *Diatryma* as a fifth landmark in the history of fossil ornithology, the earlier ones being the discoveries respectively of *Archæopteryx*, of the Jurassic; the Toothed Birds of the Cretaceous — *Hesperornis* and *Ichthyornis*; the Moas of New Zealand; and *Phororhachos* of the South American Miocene. *Diatryma* lived during the Lower Eocene near the beginning of the Age of Mammals and was a contemporary of the Four-toed Horse, *Eohippus*.

The corresponding bones of the complete skeleton seem to differ from those described by Cope as *Diatryma gigantea* as well as from Mr. Granger's specimens named *D. ajax* by Dr. Shufeldt, so it is described as a distinct species, *D. steini*, in honor of the discoverer. In their concluding pages the authors make some very pertinent remarks regarding fossil birds. They commend the revision of the fossil birds of North America and the figuring of the types, but call attention to the provisional nature of all the identifications, and the fragmentary and inadequate character of the material. "The identifications should not be changed but they should always be understood as comparisons and not as positive references." "They afford no ground for concluding that the antiquity of modern groups of birds is greater than that of modern groups of mammals. Nor, on the other hand, does it appear that they were notably less ancient."— W. S.

Dabbene on New Species of *Geositta* and *Cinclodes*.¹— In this paper Mr. Dabbene states that his researches have enabled him to recognize no less than 30 species of these two genera of which seventeen are residents of Argentina. The following are described as new: *Geositta punensis* (p. 54), La Guaiaca, Province of Jujuy; *G. rufipennis Burmeisteri* (p. 55), El Volcan, Province of Jujuy; *Cinclodes Oustaleti hornensis* (p. 58), and *C. antarcticus maculirostris* (p. 59), Isla Hermite, Cape Horn.— W. S.

Chapman on Santo Domingo Birds.²— In spite of the many explorations in Santo Domingo the avifauna, even at this late date, does not seem

¹ Especies y Subespecies Aparentemente Nuevas de *Geositta* y *Cinclodes* de la Republica Argentina y del Sur de Chile. Por Roberto Dabbene. Physis III, pp. 52-59. March 17, 1917.

² Descriptions of New Birds from Santo Domingo and Remarks on Others in the Brewster-Sanford Collection. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist., Vol. XXXVII, Art. XII, pp. 327-334. May 14, 1917.

to be thoroughly known. Following on Dr. Wm. L. Abbott's remarkable discoveries, noticed recently in these columns, come the results of Mr. R. H. Beck's explorations on the island, carried on in the interests of Mr. F. F. Brewster and Dr. L. C. Sanford, during the early part of the present year. Mr. Beck visited Mt. Tina and other points in the province of Azua and secured numerous specimens of the crossbill and finch discovered by Dr. Abbott, and also a new species of ground dove, a new goatsucker and a new warbler. These Dr. Chapman has described in the paper before us as: *Oreopeleia leucometopius* (p. 327), Mt. Tina; *Microsiphonorhis* (gen. nov.) *brewsteri* (p. 329), Tubano, allied to *Siphonorhis* and *Microligea montana* (p. 330), Mt. Tina.—W. S.

Slater on the Birds of Yemen.¹—Mr. G. Wyman Bury who spent a year in the province of Yemen in southern Arabia making zoölogical collections for the British Museum in 1912 and 1913, secured a series of over 400 bird skins. Eight of these represented undescribed forms which have been duly published by Mr. Ogilvie-Grant while Mr. Slater in the present paper lists the entire collection adding the field notes of the collector and other comments. In all 111 forms are listed, 27 of which besides the new forms had not previously been recorded from southern Arabia. An interesting historical note describes the various explorations of southern Arabia the earliest of which were those of Forskål (1761–63), Hemprich and Ehrenberg (1825) and Rüppell a little later. Both Forskål and Hemprich "sacrificed their lives to their enthusiasm," the one dying at Yerim and the other at Massowah. A map and a colored plate of *Pseudacanthis yemenensis* and *Accentor fagini* complete Mr. Slater's interesting paper.—W. S.

Henninger on the Ornithological Work of Dr. E. I. Shores.²—The collection and manuscript diary of Dr. Shores having recently come into the possession of Mr. Henninger he has prepared a very appreciative notice of Dr. Shores, who was apparently born in the late 50's and who died in Schenectady, N. Y., May 6, 1906, and has added the more important records contained among his notes. These refer in the main to Suffield, Conn. and West Bridgewater, Mass., but there are also records for other parts of New England and for Florida. Some of these have already been published but those compiling New England lists will do well to consult Mr. Henninger's paper. It is unfortunate that so many collectors who have extensive ornithological knowledge have published nothing and too often have left not even a manuscript record. When the latter does exist it is most commendable for those who may have access to it to make it public as Mr. Henninger has done in the present case.—W. S.

¹ The Birds of Yemen, south-western Arabia, with an account of his journey thither by the collector, Mr. G. Wyman Bury. By W. L. Slater. The Ibis, April, 1917, pp. 129–186.

² The Diary of a New England Ornithologist. An Appreciation. Wilson Bulletin, March, 1917, pp. 1–17.

Rhinebeck Birds and Seasons.¹—The numerous 'Bird Clubs' that are springing into existence all over the country find it necessary to issue some sort of annual report which is often enlarged, by the addition of special articles and illustrations, into quite a pretentious publication. With men of experience to guide them such as Mr. Baynes in the Meriden Club, and Mr. M. S. Crosby and Mr. Clinton G. Abbott in the Rhinebeck Club, these brochures may be made into valuable contributions to ornithological literature.

The present publication is one of these and gives an excellent resumé of methods to attract birds; an account of the winter bird life of the vicinity of Rhinebeck, N. Y.; the spring and autumn migration and the nesting season, all of which abound in accurate dates drawn from Mr. Crosby's large experience. As these clubs increase in their number of trained observers why cannot they conduct coöperative studies of at least the spring migration in their vicinity? Such work under competent direction is much more valuable than that of scattered individuals, and the director, knowing the members of his corps personally, can form a better estimate of the accuracy of their work than a distant compiler, and censor the manuscripts accordingly. The results can then be communicated to some center, national or state as the case may be, and the work of the central compiler greatly reduced. The methods of coöperative work adopted by the Delaware Valley Ornithological Club for the past sixteen years are well worth studying in this connection.

Meanwhile we have only praise for the 'Report of the Rhinebeck Club' which is not only valuable for its contents but is a neat and attractive piece of book-making.—W. S.

Shufeldt on Fossil Birds from Florida.²—In a paper by Mr. E. H. Sellards on 'The Association of Human Remains and Extinct Vertebrates at Vero, Florida' there are two pages on the fossil birds of the Vero deposit, contributed by Dr. Shufeldt in advance of his complete report. The following new names are here proposed, *Querquedula floridana*, *Larus vero* and *Ardea sellardsi*. The first two are nomina nuda as no descriptions accompany them, the last must however, rest upon the diagnosis here given. Nothing whatever is gained by quoting these new names in advance as is here done, except to provide a stumbling block for all bibliographers of the future. The rules of nomenclature are clear enough as to the fact that there is no such thing as a 'preliminary' description. The

¹ Rhinebeck Birds and Seasons. Articles Published in the Rhinebeck Gazette October 3rd, 1914, to September 25th, 1915. By Maunsell Schiefflin Crosby. Illustrated with Photographs by Members of the Rhinebeck Bird Club. To which is added the Second Annual Report of the Rhinebeck Bird Club. Published by the Rhinebeck Bird Club, Rhinebeck, N. Y. 1916.

² On the Association of Human Remains and Extinct Vertebrates at Vero, Florida. By E. H. Sellards. Reprinted from The Journal of Geology, Vol. XXV, No. 1, Jan.-Feb., 1917. Report on Fossil Birds from Vero Florida. By R. W. Shufeldt. pp. 18-19.

first description is the original description upon which a name must stand, and in these days there is absolutely no excuse for such careless practises. When so much time has to be taken up in going over the imperfect work of the older writers it is hard to understand why present day authors persist in perpetrating the same sort of crimes against taxonomy, to trouble future generations. 'The Auk' has no personal feeling in such cases, but is doing its utmost to discourage careless systematic work and to persuade all journals to insist upon full and adequate diagnoses of new forms.—W. S.

'Cassinia'.¹—With the current issue of the Delaware Valley Ornithological Club's annual, Dr. Spencer Trotter assumes the duties of editor. The high type of the publication both as to typography and character of contents is fully maintained and both the editor and the Club are to be congratulated upon the appearance of this, the sixteenth annual number.

The opening article is by Dr. Trotter and is an interesting biography of Wm. P. Turnbull, author of that beautiful little brochure on the 'Birds of East Pennsylvania and New Jersey' which Dr. Coues refers to as "the best printed treatise on American birds extant" and in which his amanuensis found "no typographical error after close scrutiny."

Henry W. Fowler, the president of the Club, presents a list of 'Some Rare or Unusual Birds in Upper Philadelphia', supplementary to a previous list published in 'Cassinia' fourteen years ago.

An excellent account of the nesting of the Least Bittern is furnished by Julian K. Potter, who fortunately studied the habits of the birds and development of the young, and photographed the nest at various stages, thereby adding to our knowledge of the species to an extent that could not be done by the mere collecting of the set of eggs.

Thomas D. Burleigh contributes a list of breeding birds from Samar, Clinton Co., Pa.

The usual 'Report on Bird Migration' and 'Abstract of the Proceedings of the Club' close the number. Those possessing this issue should make sure that reprinted pages have been substituted for pp. 27-30 which contained errors in the migration tables.—W. S.

Shelton's Land Birds of West Central Oregon.²—In this well prepared bulletin Mr. Shelton presents a list of 143 species with the status of each in the district under consideration, which is nearly coincident with the boundaries of Lake County. The method of treatment follows that of Dr. Joseph Grinnell's distributional list of California birds with the synonyms omitted. An introduction discusses the life zones of the area,

¹ Cassinia, Proceedings of the Delaware Valley Ornithological Club, of Philadelphia. 1916. Issued March, 1917. pp. 1-58.

² A Distributional List of the Land birds of Western Oregon. By Alfred C. Shelton. University of Oregon Bulletin, New Series, Vol. XIV, No. 4. January, 1917. 8vo, pp. 1-51, figs. 1-10.

the physical features of each being described as well as the characteristic forest trees. We note that two Transition Zones are recognized; a 'Normal Transition' covering most of the interior, and a 'Humid Transition' occupying most of the coast, the Canadian being limited to a very narrow strip immediately on the ocean. The nomenclature is essentially that of the A. O. U. Check-List although certain forms not accepted in that publication are considered valid by Mr. Shelton, though his reasons are not stated.

In the introduction we learn that the distributions are based largely upon work carried on in the interests of the University of Oregon, while the collection of the Oregon Fish and Game Commission was also placed at the author's command. The half-tone illustrations are from photographic views of typical areas in the several zones.

Mr. Shelton is to be congratulated upon a very creditable piece of work, which will no doubt stimulate others to carry on local distributional work in Oregon on the same plan that Dr. Grinnell and his associates have done in California.—W. S.

McGregor on New or Noteworthy Philippine Birds.¹—*Leucotreron merrilli* (269) is described as new from Luzon while notes on the occurrence of *Platalea minor*, *Ardea cinerea*, *Totanus stagnatilis*, *Sporaginus amandava* in Luzon; and of *Pycnonotus plumosus* on Cagayan Sulu Island, the fauna of which is more Bornean than Philippine.

In *Platalea* Mr. McGregor found a curious diminutive feather at the base of the first primary. A note from Dr. C. W. Richmond is published in this connection calling attention to the discovery by Prof. Baird, many years ago, of similar feathers on the wings of Vireos.—W. S.

The Ornithological Journals.

Bird-Lore. XIX, No. 2. March–April, 1917.

The Great Blue Herons of Honeoye. By Verdi Burtch. An excellent study of a New York heronry, with good photographic illustrations.

The Purple Martin at Wichita, Kansas. By R. H. Sullivan. Migration and nesting data.

The Educational Leaflet treats of the Sage Grouse and Dr. Chapman discusses the plumages of the Marsh, Winter, House and Bewick's Wrens, with a colored plate by Fuertes, which brings this series to a close.

Bird-Lore. XIX, No. 3. May–June, 1917.

Our Neighbors of the Grape-Vine. By T. Macklin. A study of nesting Robins.

¹ New or Noteworthy Philippine Birds. By Richard C. McGregor. *Philippine Jour. of Science*, XI, No. 4, Sec. D, July, 1916. pp. 269–275.

Bird Gardening on Cape Ann. By F. G. Speck.

A New department is called 'The Season' edited by Mr. Charles H. Rogers, with reports of the condition of bird-life for each two month interval by local authorities in six different regions surrounding the following centers; Boston, New York, Philadelphia, Washington, Oberlin, Ohio and Kansas City.

The Educational Leaflet treats of the White-throated Sparrow, with a colored plate by Sawyer.

The Condor. XIX, No. 2. March-April, 1917.

An Annotated List of the Birds of Fremont County, Idaho, as Observed During the Summer of 1916. By Henry J. Rust.—An excellent annotated list of 103 species with photographs of the country and nests of the Green-tailed Towhee, Brewer's Sparrow and other species.

Some Notes on the Effects upon Bird Life, of the Corpus Christi Storm of August 18, 1916. By R. A. Sell.—We wonder if the author and editor realize that in the final paragraph the Scarlet Ibis which stood on the mass of drift "like a garnet in the sands, or a rosy promise of the morning sun" is the first record of the species for Texas and only about the sixth for North America.

Birds of the Humid Coast. By Florence Merriam Bailey (continued).

A List of Birds Breeding in San Francisco County, Cal. By H. E. Hansen and W. A. Squires.—Seventy species.

Geographical Variation in *Sphyrapicus thyroideus*. By H. S. Swarth.—The Rocky Mountain bird is separated as *S. t. nataliae* (Malherbe).

An Abnormal Egg of *Fulica americana*. By Alexander Wetmore.

Names of Writers on California Birds. By T. S. Palmer.—Completes many names which were not given in full in Grinnell's Bibliography.

The Wilson Bulletin. XXIX, No. 1. March, 1917.

The Diary of a New England Ornithologist. By W. F. Henninger.—See *antea*, p. 356.

A Coöperative Bird Census at Washington, D. C. By H. C. Oberholser.—Thirteen parties participated, each covering a different section. Total number of species observed, 129; total number of individuals, 12,257. The average number of species for each party was 66, the number varying from 51 to 91, with one record of only 34. Of 16 species only a single individual was seen. The count was made on May 12, 1913.

Remarks on the Mid-May Census. By W. DeW. Miller and C. H. Rogers.—Argues for accurate counts of individuals, not estimates. Cites apparent errors in the list of L. S. Kohler; and questions his record of the breeding of Wilson's Warbler in New Jersey.

The Correlation between the Migratory Flight of Birds and Certain Accompanying Meteorological Conditions. By Frank Smith.—Claims a distinct correlation.

The Oölogist. XXXIV, No. 3. March 5, 1917.

Some Nesting Birds of the Judith Basin, Montana. No. 2. By P. M. Silloway.

A Collecting Trip in Southern California. By J. B. Dixon.

The Oölogist, XXXIV, No. 4. April 15, 1917.

A Day and Night on Buck Hummock [Ga.]. By T. D. Petry.

The Oölogist, XXXIV, No. 5. May 15, 1917.

White-tailed Hawk. By D. B. Burrows.

The Bluebird, IX, No. 3. February, 1917.

A Guest from Central America. By C. J. Stanwood. A sketch of the Magnolia Warbler, with photographs of nest and young.

Home of the Black-crowned Night Heron. By E. L. Jack. Well illustrated.

The Bluebird, IX, No. 5. April, 1917.

An Experience with Evening Grosbeaks. By C. M. Barrows. An interesting account with the most important item — *i. e.* the locality, omitted.

The Black-throated Green and Magnolia Warblers. By C. J. Stanwood. Illustrations of the nest and young of the latter.

Rara Liber. By A. L. Shepherd.—A curiously garbled account of Audubon's 'Birds of America'. The original edition appeared 1827–1838 not 1844, while the "1840 edition" in which Audubon was assisted by "a man who furnished the technical, scientific portion" was really the 'Ornithological Biography,' the text to the plates, and appeared 1831–1839. Why the Free Library of Allegheny, Pa., is singled out as the possessor of a volume of the work when there are many institutions in America which have all four volumes, it is hard to understand. It is unfortunate that such misleading articles find their way into print.

Australia's Wild Birds. By Charles Barrett.—Illustrated with photographs of interesting Australian species and their nests.

The Ibis, X Series, V, No. 2. April, 1917.

The Birds of Yemen, south-western Arabia. By W. L. Sclater. See *antea*, p. 356.

Some reflections on the Breeding-habits of the Cuckoo (*Cuculus canorus*). By Major H. F. Meiklejohn. A lengthy paper in which the theories of Dr. Rey are considered at length and a number of his conclusions questioned. Much space is given to the discussion of the various types of Cuckoo eggs and their bearing upon the general question. That this has little to do with the cause of the parasitic habit might be argued from the fact that the color of the eggs of the Cowbirds is remarkably uniform in each species.

Note on the Nidification of some Indian Falconidæ. By E. C. Stuart Baker.

Note on the Acclimatisation of the Australian Black Swan (*Chenopsis atrata*). By R. T. Gunther.

Obituary. F. C. Selous. Killed in action in East Africa, January 4, 1917.

Bulletin of the British Ornithologists' Club, CCXXI, January 2, 1917.

Discussion on the causes governing the number of eggs in a clutch.

M. J. Nicoll described two new Egyptian birds; *Sylvia norrisæ* (p. 28), Lake Karun, Fayoum and *Prinia gracilis natronensis* (p. 29), Wadi el Natron, Lower Egypt.

Bulletin of the British Ornithologists' Club. CCXXII, March 6, 1917.

Dr. E. Hartert described two new birds from Venezuela; *Synallaxis terrestris bolivari* (p. 31), Silla de Caracas, and *Vireo josephæ mirandæ* (p. 32), Galiparo, Cerro del Avila.

Discussion on the effect of the severe frost of the past winter on bird life.

Bulletin of the British Ornithologists' Club. CCXXIII, April 12, 1917.

Rothschild and Hartert described as new, *Myzomela eichorni interposita* (p. 38), New Georgia, Solomon Islands.

Bulletin of the British Ornithologists' Club. CCXXIV, April 24, 1917.

Dr. Hartert pointed out two races of *Myrmecocichla arnotti*, the East African form of which will be known as *M. a. leucolæma* Rehw. He also described as new *Phylloscopus trochiloides fokiensis* (p. 43), Kuatun, Fokien.

Mr. H. F. Witherby described *Anthus trivialis haringtoni* (p. 44), Gittidas, Kaghan Valley, N. W. India.

British Birds. X, No. 9. February, 1917.

On the European Forms of the Cormorant and Little Bustard. Condensed from an article in the 'Novites Zoologicæ'.

Some Results of Ringing Song Thrushes, Blackbirds, Lapwings and Woodcock. By H. F. Witherby.

British Birds. X, No. 10. March, 1917.

Ornithological Notes from Norfolk for 1916. By J. H. Gurney.

British Birds. X, No. 11. April, 1917.

Three Birds New to the British List. By J. B. Nichols and Thos. Parkin.—*Melanocorypha calandra*, *Acrocephalus arundinaceus orientalis*, and *Charadrius semipalmatus*.

Mortality among birds during the February Frost. By H. M. Wallis.

British Birds. X, No. 12. May, 1917.

Polygamy among Rooks. By E. B. Dunlop.

The Moults of the British Passeres, with Notes on the Sequence of their Plumages. By H. F. Witherby.—The Flycatchers and Warblers.

Avicultural Magazine. VIII, No. 4. February, 1917.

The Influence of German Aviculture. By W. E. Teschemaker.—A very interesting historical paper with extracts from early works on bird-catching and training.

Are Birds Easily Deceived? By A. G. Butler.—The use of stick-insects as bird food and various experiments with 'protectively colored' insects seem to show that cage birds have very little difficulty in detecting these 'protected' insects.

Sheathbills. By Graham Renshaw.—An interesting popular account of these curious birds.

Avicultural Magazine. VIII, No. 5. March, 1917.

Whydahs. By W. S. Baily.—Important data on molting and nest building in captivity. The males apparently always built the nests.

Notes on Some of the Vireos (or Greenlets) of North America. By The Lady William Cecil.—A popular account of various species observed in different parts of America. A Black-headed Vireo observed in Texas is hailed as a "Fourth specimen of this extremely rare bird . . . of which Dr. Coues says only three specimens known." Does the writer suppose that American Ornithology has stood still since the 'Birds of the Colorado Valley' appeared?

Some Birds of the Balkans. By Capt. B. E. Potter.

Change of Colour in the Blue Wren (*Malurus cyaneus*) as affected by Seasons. By H. D. Astley.—Now acquires the full plumage in spring instead of autumn as it did in Australia, but the molting since it reached England seems to have been somewhat irregular.

Avicultural Magazine. VIII, No. 6. April, 1917.

The Celebean Maleo. By Graham Renshaw.

Capacity in Nest-construction. By A. G. Butler.—Accepting polyandry as an undisputed fact in the English Cuckoo the author states that the pursuit of the female by several males, which he has witnessed, suggests that she "is so pestered by the attentions of numerous suitors that she has no time to spare for nest-construction."

Avicultural Magazine. VIII, No. 7. May, 1917.

The Coming of the Nightingale. By W. E. Teschemaker.

Water Rails Calling. By A. Trevor-Battye.

Some Tasmanian Birds' Nests. By H. Stuart Dove.

The Display of the Blue Wren (*Malurus cyaneus*).

Bird Notes. VII, No. 7. July, 1916.—VIII, No. 3. March, 1917. Nine monthly numbers mainly devoted to cage birds. Of especial interest are the following:

In July: Grebes. By W. S. Baily.

Bird-catching in India. By D. Dewar.

In February: Nesting of the Black-breasted Quail. (*Colinus pectoralis*.) By W. S. Baily.

In March: Some Toucans. By W. T. Page.

Bird Notes and News. VII, No. 5. Spring, 1917.

Food-Crops and Birds. Emphasis is placed upon the increased importance of protecting birds during the present period of food shortage when it is imperative to get the largest possible return from our crops, and when advantage must be taken of every factor which will keep insect pests in check. The reviewer has taken the same stand in a course of lectures recently given in South Carolina and would suggest the advisability of all those working in the interests of bird protection to emphasize this point.

Salmon-Flies and Rare Birds' Feathers. By W. Baden-Powell.—Demonstrates that the gut of silk worms dyed in brilliant colors is just as effective for the construction of 'flies' as the brightest natural feathers

known. This effectually removes a stock argument of the plumage dealers to enlist fishermen against legislation prohibiting the importation of plumage.

The Emu. XVI, Part 4. April, 1917.

North Australian Birds. Observed by William McLennan. Communicated by H. L. White.—An annotated list of 198 species in which the nomenclatural tangle that confronts the Australian ornithologist is solved by using both the R. A. O. U. names and those of Mathews' List for every species!

Notes on a Collecting Trip in the Lower North of South Australia. By Edwin Ashby.

Bird Life as Affected by Drought. By Charles Barnard.

Observations from the Fern-tree Gully District (Vic.). By R. T. Littlejohns and S. A. Lawrence.

Description of the Nest and Eggs of *Melithreptus atricapillus mallee* Math. By F. E. Howe.

Obituary. Dr. E. P. Ramsay.

The South Australian Ornithologist. III, Part 2. April, 1917.

Birds of the North and North-West of Australia. By G. M. Mathews. (Continued.)

Further Notes upon the Arctic Skua (*Stercorarius parasiticus*). By S. A. White.

Notes on *Ashbyia lovensis* and *Amytornis merrotsii*. By J. R. B. Love.

Journal of the South African Ornithologists' Union. XI, No. 2. December, 1916.

Observations on the Birds of the District of Humansdorp, Cape Province. By B. A. Masterson.

The Summer Migration of 1915, as Observed in the Eastern District of the Cape Province. By Rev. Robert Godfrey.

Revue Francaise d'Ornithologie. IX, No. 94. February, 1917. (In French.)

Bird Killing in Provence. By J. l'Hermite. (Continued in March and April.)

The Trade in Birds at Dakar. By Dr. Millet-Horsin. (Continued in March.)

Study of a collection of Birds from Matto Grosso. By A. Menegaux. (Continued in March and April.)

Ardea. V, No. 3-4. December, 1916. (In Dutch.)

The Hovering of Birds. By Dr. C. A. Crommelin.

Remarks on the Secretary-bird. By F. E. Blaauw.—Photographs of the bird, nest and egg.

Wintering of the Avocet in Zeeland. By G. J. Van Oort.

The Nightingale in Captivity. By J. L. F. Meyere.

At What Height do Birds Migrate? By A. A. Van Pelt Lechner.

Ardea. VI, No. 1. April, 1917.

Migration Records for Holland in 1916. By Dr. H. Ekama.

Ornithological Articles in Other Journals.¹

Oldys, Henry. The Meaning of Bird Music. Claims that its development is due to the same causes that have been responsible in the development of human music. (The American Museum Journal, Feb., 1917.)

Skinner, M. P. Some Birds of the Yellowstone. (*Ibid.*)

Miller, Leo E. A Search for *Scytalopus*. (The American Museum Journal, March, 1917.)

Lucas, F. A. A Forgotten Naturalist. (*Ibid.*) Sketch of Titian R. Peale.

Hornaday, Wm. T. The War for America's Wild Life. (The American Museum Journal, April, 1917.)

Cherrie, Geo. K. To South America for Bird Study. (*Ibid.*)

Patch, Clyde L. My Bird Houses. (Ottawa Naturalist, March, 1917.)
—Interesting observations.

Farley, Frank L. Birds Observed at Grande Prairie City District. (*Ibid.*)

Cooper, John M. Birds of Lake Onigamis Region, Que., and Algonquin Park, Ont. (Ottawa Naturalist, January, 1917.)—Annotated lists.

Criddle, S. and N. Horned Larks at Aweme, Manitoba. (Ottawa Naturalist, February, 1, 1917.)—Notes on habits and abundance of the four races which occur there.

Collinge, W. E. The Economic Status of Wild Birds. (Scottish Naturalist, March, 1917.) Reprinted from the Jour. Royal Hort. Soc.

Boase, Henry. Observations on Some Habits of the Coot. (*Ibid.*)

Chapman, Abel. Brent Geese. (Scottish Naturalist, April, 1917.)—States that as both dark and light-bellied Brant breed together in Spitsbergen and elsewhere in northern Europe that they cannot be regarded as geographic races. A note from Dr. Hartert corroborates his statement and further calls attention to the fact that the name *glaucogastra* of Brehm applies to the dark bellied form not the light as used in the A. O. U. Check-List. Heretofore the light-bellied Brant occurring in England in winter were supposed to be migrants from America which was considered to be the exclusive breeding ground of the light-bellied form. Other notes on the subject occur in the February and May numbers.

Allen, A. A.—The Waxwing Family. (American Forestry, February, 1917.)—A study of the Cedar Waxwing with photographs of the nest and young.

Storrs, Caryl B. Minnesota's Wild-Life Museum. (The Minnesotan, March, 1917.)—An account of the work of Dr. Thos. S. Roberts.

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Roberts, Thos. S. A Minnesota Springtime Bird Calendar. (*Ibid.*) Illustrated with original photographs.

Bartsch, Paul. Birds Observed in 1916, in the Region of Miami and the Florida Keys from May 15 to June 4 and along the Railroad from Key West to Miami on June 24. (Yearbook Carnegie Institute, 1916, pp. 182-188.) — Fifty-four species, eight of which are additional to similar lists of previous years.

Stone, W. A New Hummingbird from Colombia. (Proc. Acad. Nat. Sci. Phila., 1917, pp. 203-204. June 8, 1917.) — *Lepidopyga lilliae* (p. 204), Punto Caiman, Santa Marta, Col.

Lincoln, F. C. A Review of the Genus *Pedicecetes* in Colorado. (Proc. Biol. Soc. Wash., XXX, pp. 83-86. May 23, 1917.) — *P. phasianellus jamesi*, subsp. nov. (p. 84), Castle Rock, Colo.

Peters, Jas. L. The Porto Rican Grasshopper Sparrow. (*Ibid.*, pp. 95-96, May 23, 1917.) — *Ammodramus savannarum borinquensis* subsp. nov. (p. 95).

Wetmore, Alexander. A New Honey-eater from the Marianne Islands. (*Ibid.* pp. 117-118, May 23, 1917.) — *Myzomela rubratra saffordi* subsp. nov. (p. 117), Guam.

Oberholser, H. C. Description of a New Genus of Anatidæ. (*Ibid.*, pp. 119-120, May 23, 1917.) — *Horizonetta* proposed for the Laysan Duck, *Anas laysanensis* Rothsch.

Oberholser, H. C. Mutanda Ornithologica. (*Ibid.* pp. 75-76, March 31, 1917.) — *Nettion torquatum* (Viell.) becomes *N. leucophrys* (Viell.). *Cloephaga magellanica* (Gm.) becomes *C. leucoptera* (Gm.). *Cerchneis gracilis* (Less.) becomes *C. aræa*, nom. nov. (p. 75) and *C. alopec deserticola* Reich. becomes *C. a. eremica* nom. nov. (p. 76). *Rallus intermedius* Milne Edwards becomes *R. adelus* nom. nov. (p. 76).

Eifrig, C. W. G. Notes from the Chicago Area. (The American Midland Naturalist, V, No. 2.)

Brother Alphonsus. Seasonal Bird Notes in nearly every issue of The American Midland Naturalist.

Chislett, R. (1) Some Points in the Nightjar's Symposium. (Wild Life, January, 1917.) — (2) Concerning the Piciidæ. (*Ibid.*)

Atkinson, J. The Peregrine Falcon at Home. (Wild Life, February, 1917.)

Murray, J. H. Some Further Notes on the Reed Warbler. (*Ibid.*) — All 'Wild Life' articles illustrated by remarkably fine photographic reproductions.

Dabbene, Roberto. Cases of Albinism and Xanthosis in Argentine Birds. (Physis, II, p. 277.) — In Spanish.

Dabbene, Roberto. Two New Rapacious Birds for Argentina. (*Ibid.*, p. 428, see also p. 291.) — In Spanish.

Bateson, W. and Haig, T. R. Note on a Pheasant Showing Abnormal Sex Characters. (Jour. of Genetics, VI, No. 3, pp. 163-164.)

Allen, Francis H. Birds and their Trees. (The House Beautiful,

June, 1917.)—The intimate association between certain birds and certain trees. Some excellent photographic illustrations by Cordelia J. Stanwood, H. W. Gleason and A. A. Allen.

Publications Received.—Allen, Francis H. Birds and their Trees. (The House Beautiful, June, 1917.)

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CORRESPONDENCE.

Plumage Importation in England.

EDITOR OF 'THE AUK':

A long-delayed letter (dated February 26, 1917) has come to me from Mr. James Buckland of London bringing the important news that for the duration of the war the importation of the plumage of wild birds into England has been suspended. Efforts are to be made, Mr. Buckland says, to have the suspension of the traffic made permanent. That these efforts will be successful there would seem to be little doubt, in view of the period of stress that will follow the conclusion of the war. The British parliament would not be likely to re-open traffic in such an absolute luxury in the midst of the keen struggle for necessities that will follow the cessation of hostilities, more especially since the chief beneficiary of such action would be Germany.

Faithfully yours,

HENRY OLDYS.

Silver Spring, Md., April 25, 1917.

Coloration of Down in Adult Ducks.

EDITOR OF 'THE AUK':

With reference to Mr. J. H. Bowles's remarks concerning the coloration of the down in ducks (*Auk*, 1917, pp. 206-7) a paper by Miss A. C. Jackson on the moult of ducks (*British Birds*, July, 1915, vol. IX, pp. 34-42) should be consulted. Briefly stated, Miss Jackson there shows that in

certain species of ducks the females have a spring moult of the down as well as of other parts of the plumage and that not only is the winter down renewed but in addition there grows what she terms a "nest down," which is longer, coarser and of a different color.

Yours faithfully,

H. F. WITHERBY.

326 High Holborn, London, W. C.

EDITOR OF 'THE AUK':

In 'The Auk' (XXXIV, pp. 206-207) is an interesting note by Mr. Bowles, calling attention to the differently coloured down in winter and summer in a number of Ducks. Apparently the author has not seen Miss Jackson's article in 'British Birds' (IX, p. 35, 1915) where she describes the down-moult of certain Ducks. It was first discovered by me in the Long-tailed Duck (*Clangula hyemalis*), where it is very striking, the down being whitish in winter and moulting into an almost black one in the spring. While studying Ducks I had already noticed that the description of nest-down did not agree with what I found on female ducks, but I did not grasp the reason, until I noticed the change in the Long-tailed Duck or "Old Squaw". Miss Jackson soon after, while working in the Tring Museum, discovered, to use her own words (l. c.) "that the females of the surface-feeding Ducks and those of the genus *Nyroca* also acquired a special down just before the breeding season. Female *Tadorna tadorna* also have a down-moult in spring. This down is evidently used for embedding the eggs during incubation, and has been designated 'nest-down' by Dr. Hartert, a term I propose to use in describing it." I believe that all palæarctic Ducks, or at least the majority of them, have a down-moult in spring, but in some species the colour is the same, though the nest-down is often longer and coarser than the ordinary down. Where there is no material difference in colour, the down-moult is difficult to observe in skins, but of course very easily seen when one skins a fresh bird. I may add that Miss Jackson's article contains also valuable details about the spring-moult in adult females of several British Ducks, which must also take place in American species.

ERNST HARTERT.

Tring, May 15, 1916.

Subspecific Designations.¹

EDITOR OF 'THE AUK':

The exception taken in 'Bird-Lore' to the current practice of subspeci-

¹ Published by permission of the Deputy Minister of Mines, Canada.

fically naming birds¹ by geographic probability is most timely. How can any one name the exact race on a sight record or, if specimens are taken, when they have not been compared with an authentic series and how useful are determinations when so made? They add nothing to our knowledge. If they agree with current conceptions they only reiterate previous statements without substantiating them; if they disagree they are futile unless supported by evidence. Further, if a writer knows the geographical probabilities, can he not assume that the same evidence is accessible to a reader? At best, the practice (the common one) is useless and too often fixes misconceptions instead of correcting them.

Then, what is the necessity of subspecifically naming everything seen, heard or written about regardless of the context? Is not the specific name close enough in the majority of cases? In ordinary practice we do not deem it always necessary to speak of a horse or dog by the name of its technical strain or race. We do not often find it necessary to speak of Clydesdale Horses, Guernsey Cattle or Blue Belton Setters, when we refer to horses, cows or dogs. When engaged in highly critical work or in special lines of investigation, where exact relationship is more or less the essence of the subject, we can use the most exact technical terminology, but how often is such refinement necessary, and if necessary is it safe to trust to mere unverified probability?

In cases cited by "J. D.", Evening Grosbeak, *Coccothraustes vespertina* or Hudsonian Chickadee, *Penthestes hudsonicus* are just as satisfactory as Eastern Evening Grosbeak or Acadian Chickadee. They tell just as much as the others, for one ornithologist should be as capable of determining the probabilities of geographic distribution as another. If a writer knows certainly the individual identity, or wishes to call attention to the subspecific distinction as such, he can be as definite as his knowledge permits or the case demands, but it smacks of pedantry to be needlessly precise and is often misleading.

Nowadays when ornithologists are splitting so finely and keen authorities disagree so widely not only upon what forms to recognize but also upon the applications of individual identity, the personal authority of a determination is quite as necessary as the identity itself. The fact is that the subspecies is a highly technical subdivision and of very little interest or use to the non-technical student who can usually avoid it with safety to himself and benefit to science. Many of the abuses of modern feather-splitting would be obviated if less importance was placed upon the subspecies. However true these forms may be as matters of fact they are the smallest and least important of zoölogical divisions. We have studied these slight differences so closely and with such concentration that in many minds these minor racial differences have eclipsed the major specific likenesses. If we altogether ignored subspecies except where their use was found neces-

¹ Review of Ornithological Magazines,— 'The Auk', by J. D. Bird-lore, Mar.,-Apr., Vol. XIX, 1917, p. 97.

sary, and then only after verification, a great number of imaginary, useless or very slight distinctions would automatically sink into practical obscurity while those whose value was proved by their continued use would be confirmed.

It is unfortunate that the A. O. U. Committee has not seen fit to give us in the Check-List vernacular specific names. Each subspecies, no matter how slightly defined, has been given a distinctive popular name, but at present we have no means of speaking vernacularly of the more much important group, the species. Instead, in many cases, the proper specific name has been applied to one of the subordinate races, usually the type form, thus restricting to one race the term and popular concept that properly belongs to the whole species. A Shetland pony is as much a Horse as is a Clydesdale, and a dog is a Dog whether setter or hound. So an evening grosbeak is still an Evening Grosbeak whether it belongs to the western or the eastern group, and a robin is an American Robin whether it is *P. m. migratorius* or *P. m. propinquus*. The current practice of the A. O. U. has fostered the feeling that when a subspecies is defined the type form remains the species while the new form is subordinate to it. In fact our concepts, or at least the popular expression of them, have not kept pace with the growth of the trinomial system. The species does remain intact in spite of the fact that we discern minor groupings within it and so should be presented in our nomenclature. All this has been provided for in the authorized latin nomenclature for the scientific student who should already be possessed of correct principles, but the general public which draws most of its inspiration and forms a large part of its fundamental concepts from the popular system of English names is given a misleading guide. The vernacular system was designed primarily for the use of the general non-scientific public and not for the scientist who has only adopted it informally as a matter of colloquial convenience. Why not adapt it to its original purpose and as the work of scientific minds make it inculcate scientific truths rather than misstatements.

Considering all things, the unwisdom of encouraging careless subspecific designation, the general public's lack of legitimate interest in a purely technical subject, and the convenience of all concerned, why not cut the Gordian knot cleanly and while restoring the logical names to the species discard subspecific vernacular names altogether? The very fact of having no convenient vernacular handle for merely technical distinctions would automatically instil caution in the inexpert by eliminating the familiarity that breeds contempt, without hampering the specialist. The sooner the species is given a popular name, the facts of subspecific relationship presented to the public with scientific accuracy and perspective and the indiscriminate use of the subspecies by the inexpert discouraged, the sooner will some of the difficulties of the present practice disappear.

P. A. TAVERNER.

Ottawa.

[The first paragraphs of Mr. Taverner's communication, and comments in the current numbers of some of our ornithological journals bring up a matter of very great moment to editors, *i. e.* What to do with sight records and how to be consistent in the practice of any plan that may be adopted? A few remarks on this subject would seem to be in order although they do not cover the main point of Mr. Taverner's letter.

'The Auk' has questioned the accuracy of certain 'sight' records published elsewhere and has in turn been criticized for certain 'sight' records that have appeared in its own columns. 'J. D.' writing in the review pages of 'Bird-Lore' criticizes the publication of 'sight' records—more particularly of races only slightly differentiated from others, yet we rarely find any but 'sight' records in 'Bird-Lore' and the last number contains a positive 'sight' identification of *Dendroica dominica dominica* although it is questionable whether this race can be positively distinguished in the field from *D. d. albilora*. 'The Condor' recently contained a severe editorial criticism of the publication of 'sight' records by incompetent observers and scored authors who have not posted themselves on the previous literature of their subject, yet in the same issue appeared the first record of a certain bird for the State of Texas, a 'sight' record, casually published, without editorial comment by an author whose name does not appear in any of the indices to 'The Condor' as a previous contributor to ornithological literature. Certain minor ornithological journals and independent publications of 'bird clubs' consider that all is grist that comes to their mill and publish any records that their members may hand in. These statements are made not in a spirit of criticism but simply to show the difficulty of consistency and also the nature of the condition that we face.

Now as to the best plan to adopt in regard to 'sight' records. We may, it would seem, divide such records into two categories: (1) Races or species which so closely resemble other forms as to render positive identification impossible without having a specimen in hand. (2) Species which are rare or unusual in the locality at which the observation is made and with which the observer has perhaps had no previous experience. In cases of the first category the extreme attitude would be to publish no records except those based upon specimens actually collected. This would of course be out of the question. Almost all of our data on bird migration, bird habits, etc. are based upon 'sight' records and must of necessity be so. As a matter of fact we are willing to accept practically all sight records for everyday birds and only balk when it comes to records of rare or unusual species. There is just as much chance of one of the Juncos that we record as *J. hyemalis hyemalis* belonging to one of the western races as there is of the Evening Grosbeak of the past winter belonging to the western instead of the eastern form, the possibility to which 'J. D.' calls attention. But we fail to see where we should profit by refusing to record observations on eastern Juncos under the caption *Junco hyemalis hyemalis*. Any compiler of a state report or general work where subspecies are used will undoubtedly quote our observations under that heading because the evidence of speci-

mens actually collected is so overwhelmingly in favor of the accuracy of this disposal of them. Therefore why should not the original observer make the same assumption? If we adopt Mr. Taverner's plan for *all* sight records of trinomially named birds we see no possible alternative but to abandon the use of subspecies entirely. Another point to be considered in this connection is the case of *species* which are very close to one another such as the Black-capped and Carolina Chickadees; Olive-backed and Gray-cheeked Thrushes; Louisiana and Northern Water-Thrushes; Western and Semipalmated Sandpipers, Common and Long-billed Dowitchers, etc. Some observers, under certain conditions, can distinguish most of these in life, but there are others who surely cannot. How can Mr. Taverner's plan be applied to these? Trinomials we may remind him do not represent degrees of difference but the fact of intergradation, and there are certain subspecies which can be separated far more easily than can some species. If subspecies are abandoned as such many of them will have to be elevated to specific rank, as all of them are in Sharpe's 'Hand List' and certain other works.

'J. D.'s criticism points out no definite policy and we are not clear whether he has Mr. Taverner's plan in mind or whether he would reject 'sight' records of this kind entirely. We can hardly suppose that he takes the latter view since we think that everyone will admit that we gain something by recording the fact that Evening Grosbeaks of some kind visited us last winter even though we cannot say just which race each flock belonged to.

Now we are not rejecting Mr. Taverner's plan entirely. We think it is an excellent one in cases where a reasonable doubt exists as to the identity of the subspecies or in intermediate territory where two subspecies merge one into the other. In fact the plan has already been used in 'The Auk' but unfortunately it has caused misunderstanding, for the following reason. It often happens either from preference or accident, that the binomial form (*Junco hyemalis*, for instance) is used to indicate the eastern race of Junco instead of the more proper trinomial form (*J. hyemalis hyemalis*), as was the general custom prior to the last A. O. U. 'Check-List'. It is thus not clear without further explanation whether the binomial name refers to the eastern race alone, or to this whole group of Juncos without indication of any individual race, as Mr. Taverner would use it. It would therefore seem clearer to adopt the plan used by Mr. Mousley (Auk, 1917, p. 215) in recording a brown-headed Chickadee, i. e. "*Penthestes hudsonicus* subsp.?" Mr. N. C. Brown on the same page adopts Mr. Taverner's plan and writes "*Penthestes hudsonicus*," but has to add a statement that the form of the subspecies was not determined, in order to make it clear that he was not recording the true *P. hudsonicus hudsonicus*. In the case of 'sight' records of closely related *species* Mr. Taverner has no suggestion and we can apparently only take the word of the observer if he be reasonably reliable, although even in the case of reliable persons there must always be a certain percentage of error in such cases. Long experience in compiling migration records leads us to place far less reliance upon the average

dates computed from sight records for the smaller thrushes and members of the genus *Empidonax*, than for any other species, and we feel that any general statement of the time of occurrence of these and a few other species based on 'sight' records, when we know that the closely allied species was also present, should be accompanied by another based solely upon such *collected* specimens as may be available.

So much for the class of cases discussed by 'J. D.' and Mr. Taverner. Now as to the second category we feel that there is no escape for the editor and that he must simply use his best judgment as to what to publish and what to reject. No definite rules can be set up for him to follow. Several factors enter into the question; the reliability of the observer; the circumstances of the observation; and the possibility of identification under the conditions given. A record of a rare warbler, for instance, is received. If we know nothing of the observer we make inquiries, and if the record is lacking in circumstantial details, we ask the observer for a more detailed statement. If all these prove satisfactory, if there was adequate time for a full study of the bird at close quarters with glasses, and characteristic markings were noted on the spot, and identification verified later from books or specimens, then the record seems worthy of acceptance provided that the editor feels that he, as an average observer, could identify the bird under the same circumstances.

In the case of obscurely colored birds or those which have no prominent distinctive markings, and which cannot often be closely approached, like shore birds, gulls and other water birds; or warblers in autumnal plumage, we should probably reject all 'sight' records of rare or unusual species unless made under very exceptional circumstances. Rejections such as those referred to do not in any way reflect upon the accuracy or good faith of the observer. They are simply cases that are physically impossible of definite determination without resort to the gun.

In regard to obvious errors of observation, Dr. Frank M. Chapman, in a discussion of this question¹ which can be read with profit in this connection, says: "it is difficult, in fact sometimes impossible, to convince the observer of his error." We have found that by placing before him unnamed skins of the bird the observer thought he saw, and of other allied species, at about the distance at which the live birds were seen, that he is made to realize more clearly the difficulties which enter into the case.

As we said before we cannot govern publication. All sorts of sight records, good, bad and indifferent are being published and will be published in increasing numbers. We face a condition not a theory, and the compiler of general works and faunal lists must decide for himself what to accept and what to reject, but if editors will try to live up as closely as possible to some such plan as above outlined they cannot fail to assist him materially in his work. Mr. Taverner's suggestion to provide vernacular names for the specific groups as the 'Check-List' has both advantages and disadvantages. The current use of "Brown-headed Chickadee" for the un-

¹ Bird-Lore, 1902, p. 166.

determined subspecies of the Hudsonian group is evidence of the need of such a term under such conditions. But the task of making the average amateur understand the use of the more or less abstract specific designation when each "variety" has its own latin name is not an easy one. He wishes to use a name for a concrete thing not for a group, so that unless we abandon subspecies entirely we doubt the practicability of using specific vernacular names.—WITMER STONE.]

NOTES AND NEWS.

DR. EDWARD PIERSON RAMSAY, of Sydney, Australia, a Corresponding Fellow of the American Ornithologists' Union since 1884, died at his home in Truro, near Sydney, December 16, 1916, at the age of 74. He was born at Dobroyde House near Sydney in 1842. He was a Fellow of the Royal Society, a Fellow of the Linnæan Society, an honorary member of the Field Naturalists' Club of Victoria and for twenty years, from 1874 to 1895, curator of the Australian Museum in Sydney. He was one of the leading Australian ornithologists of his time and was also interested in botany and entomology.

His first paper on birds entitled 'On the *Didunculus strigirostris*, or Tooth-billed Pigeon from Upolo,' appeared in the 'Ibis' in 1864 and during the next 30 years he published many papers on zoölogy. The list of his publications in the 'Royal Society's Catalogue of Scientific Papers' numbers 120 titles and most of them relate to birds. His earlier contributions appeared in the 'Ibis' and the 'Proceedings of the Zoological Society of London,' but after 1877 he published most of his papers in the 'Proceedings of the Linnæan Society of New South Wales' and in the 'Records of the Australian Museum.' One of his best known publications on ornithology was his 'Tabular List of all Australian Birds at present known' issued in two editions in 1878 and 1888. He was also author of 'Notes on Food Fishes and Edible Mollusca of New South Wales,' 1883, and of a number of short papers on mammals and fishes.

In commemoration of his work a genus, *Ramsayornis* Mathews, 1912, and at least 10 species of birds and two of mammals have been named in his honor.—T. S. P.

NEWELL A. EDDY became an Associate Member of the American Ornithologists' Union in 1885, and retained his membership for a long series of years.

He died at his home in Bay City, Michigan, on February 28, 1917.

Mr. Eddy was born in Bangor, Maine, May 20, 1856, being the son of

Jonathan and Caroline (Bailey) Eddy. His father was one of the leading lumber manufacturers of Maine, and was descended from the Rev. William Eddy, a vicar of Cranbrook, County of Kent, England, whose son, Samuel settled in Plymouth Colony in 1630. His great grandfather Col. Jonathan Eddy, served with distinction in the Revolutionary war.

Mr. Eddy received his education in the public schools at Bangor, at Phillips Academy, Andover, Mass., and at Yale College, from which he graduated in the class of 1879. He was married in February, 1880, to Marianna, daughter of Dr. Edward M. Field, of Bangor, Me. His wife and six children survive him.

Mr. Eddy was an authority on bird life in Michigan, and had in his possession what was said to be the largest collection of birds in the State, all of which he had collected and mounted himself, and he had assisted in the publication of works on Michigan birds.

He was a member of the Bay City school board for six years, and was an officer of various business and financial companies.—H. M.

GUSTAV ADOLPH LINK, Assistant Preparator in the taxidermic department of the Carnegie Museum, died at Pittsburgh, Pa., on August 16, 1916, from the effects of a bite accidentally received on the preceding day from a captive rattlesnake. Mr. Link was born in Pittsburgh on May 15, 1860, and became interested in collecting and preserving birds at an early age, forming a very creditable collection of the local species. In 1898 he joined the staff of the Carnegie Museum as assistant in the taxidermic laboratory, where, working under the direction of Mr. Frederic S. Webster, he mounted by far the largest part of the single specimens of birds now on exhibition in the gallery of birds of that institution. Many of the mounted reptiles, too, are examples of his work. Mr. Link was a member of a party from the Carnegie Museum which went to Texas in the summer of 1907 to collect reptiles, in which he was very successful. He collected reptiles also in the Isle of Pines in May and June, 1910, and was sent to the same locality again in 1912 to collect birds, his stay lasting from June of that year until May of the next. The large and representative collection which he brought back formed the basis of the present writer's paper on the ornithology of this island, recently published in the 'Annals of the Carnegie Museum' (Vol. X, 1916, pp. 146-296). Mr. Link's perseverance and enthusiasm, in spite of the many difficulties under which he labored, served him in good stead in bringing to a successful conclusion the various projects in which he engaged, and the tragic manner of his taking off was a great shock to his many friends both in and outside of the institution where he spent so many years of faithful service.—W. E. C. T.

NORMAN DEWITT BETTS, an associate of the American Ornithologists' Union since 1908 and a contributor to 'The Auk', was killed by lightning on his ranch in northeastern Utah, on May 21, 1917.

He was born in New York City on July 21, 1880. His parents, both

dead, were John McEwen and Ellen Scofield Betts. His first schooling was received at Welton Academy and Chases Academy at Norwalk, Conn. From there he went to Cornell where he graduated as a mechanical engineer. After holding a position in New York in the Westinghouse Company he followed the call of the West and landed on the ranch of a friend in Utah where he learned to love the semi-wilderness which was so dear to him afterwards.

Joining the Forestry Service he was engaged in field and laboratory work in Lafayette, Ind., St. Louis, Mo., Boulder, Col., and Madison, Wis., but routine work did not satisfy his active spirit, and leaving Madison in the summer of 1916 he bought a ranch adjoining that of his friend in Uintah County, Utah, fifty miles from the railroad, and settled down to the life of a rancher. He was on horseback in company with a herder who was bringing in some sheep when a storm overtook them not far from home. Mr. Betts received the full force of the bolt and was killed instantly as was his horse and that of the herder but the latter was only stunned and recovered. Mr. Betts was buried at Walden, N. Y., beside his parents.

His first ornithological contributions were published in 'The Auk' and 'Bird-Lore' in 1909 and 1910, and he continued to send in his observations on the birds of Colorado, Wisconsin and Montana to these journals and 'The Condor' every year until his removal to Utah. His most important publication was his 'List of the Birds of Boulder Co., Colo.' (see Auk, 1914, p. 416).

Whoever had the good fortune of Mr. Betts' acquaintance will miss him sorely, for his character was exemplary and his personality most charming. Ornithology itself sustains a real loss, for having trained himself for efficient bird study in the most difficult fields he was at the point of doing much valuable work in the little known region of his new home.— O. W.

SAMUEL THORNE, an Associate of the American Ornithologists' Union, from 1908 to 1915, died July 4, 1915, in his 80th year. He was born in Dutchess County, N. Y., Sept. 6, 1835, and in early life was a farmer and breeder of improved stock at Thorndale, N. Y. From 1868 to 1872 he was engaged with his brothers in New York in tanning and selling leather. He retired from this business in 1872 and in his later years became a director in several railroads and banks, and in the New York Life Insurance and Trust Company. Mr. Thorne was a patron of science and was deeply interested in the New York Botanical Garden and the New York Zoological Society. As one of the early members of the Executive Committee he took an active part in the constructive work of the Zoological Park, and at the time of his death he was Vice-President of the Zoological Society.— T. S. P.

AMONG the deceased members of the A. O. U. whose obituaries have not been published in 'The Auk' is Henry Warden Marsden, an associate from 1904 to 1914, who died at Pacific Grove, Calif., Feb. 26, 1914, at the age of

57. Readers will find in 'The Condor (Vol. XVI, pp. 202-204, Sept., 1914), an interesting sketch of his life by Dr. Louis B. Bishop, with an account of his work and a list of his papers.

ON July 28, 1916, the Sociedad Ornithologica del Plata was organized at Buenos Aires, Argentina. Dr. Roberto Dabbene was chosen president of the society and Sr. Pedro Serie, secretary.

THE Council and Mayor of Youngstown, Ohio, have decreed that the new reservoir with its adjacent shores shall be a game preserve with all hunting and trapping prohibited. Inasmuch as this reservoir has a surface area of 2700 acres and is six miles long and in places is over a mile in width, is located seventeen miles from the city, and is the largest inland body of water in northeastern Ohio, its value as a protected reserve for birds can readily be appreciated.

The municipal authorities of Youngstown are certainly to be congratulated for their far-sightedness and their understanding of the need for wild life protection. We wish more of our cities had officials with the same appreciation of such matters.

MR. W. DEWITT MILLER, Associate Curator of Ornithology in the American Museum of Natural History, accompanied by Mr. Ludlow Griscom, reached Corinto, Nicaragua, March 10th, on an American Museum expedition to acquire a field knowledge of Nicaraguan birds. They were met and guided in Nicaragua by Mr. William B. Richardson, a resident of that country, who had collected much in tropical America for the Museum. Mr. Miller writes under date of May 2nd: 'We have . . . traveled hundreds of miles on muleback, done some collecting and made many observations of interest. We already have several species new to Nicaragua . . . including *Euphonia elegantissima*, previously known both from Mexico and from Costa Rica but not between . . . One of the most interesting birds we have met is *Megaquiscalus nicaraguensis* . . . the most abundant bird about the village of Tipitapa . . . Besides skins of ♂ and ♀ we have nests, eggs and photographs. This species is confined to these two Nicaraguan lakes.' The party visited as many diverse parts of the country as possible, and expected to sail for home about June 1st.

MR. W. E. CLYDE TODD headed an expedition to the interior of Labrador which left Pittsburgh in May, to collect birds and mammals for the Carnegie Museum.

ON April 20, Mr. John Hall Sage, Secretary of the American Ornithologists' Union was the guest of Dr. A. K. Fisher, at the camp of the Washington Biologists' Field Club, at Plummer's Island in the Potomac near Washington, D. C., where they were joined by sixteen other fellows and members of the Union who gathered there in honor of Mr. Sage's seventieth

birthday. We are sure that the entire membership of the A. O. U. which he has served so long and faithfully will endorse the action of the Plummer's Island gathering in wishing him many happy returns of the day.

MR. HARRY S. SWARTH of the Museum of Vertebrate Zoölogy at Berkeley, Calif., is now in southern Arizona studying the breeding birds of the region between Phoenix and Globe along the 'Apache Trail'. As a result of this trip Mr. Swarth will doubtless be able to supplement the notes in his 'List of the Birds of Arizona' on the local distribution of some of the species which occur in this part of the State.

As an illustration of the vital interest that is being taken throughout the country in the passage of the Migratory Bird Treaty Enabling Act; and as an example to other associations and individuals who have not yet written to their representatives in Congress, it gives us great pleasure to announce that at a meeting of the Executive Committee of the National Association of Game and Fish Commissioners held at Washington, D. C., on the 13th day of June, 1917, present, M. L. Alexander, President; Carlos Avery, Secretary; John P. Woods, Treasurer; J. Quiney Ward, Geo. H. Graham, and W. E. Barber, the following resolution was unanimously adopted:

WHEREAS, There is pending in Congress a bill (S. 1553 — H. R. 2612) to give effect to the migratory bird treaty between the United States and Great Britain for the protection of migratory game and insectivorous birds in the United States and Canada; and

WHEREAS, The conservation and protection of the migratory insectivorous birds is so closely related to the conservation of the food, cotton and timber crops of the country, and the migratory game birds constitute an important source of the food supply, the conservation of which is so necessary to the success of the United States and her Allies in the war upon which we are now engaged;

THEREFORE, BE IT RESOLVED, It is the sense of the Executive Committee of the National Association of Game and Fish Commissioners that the said bill is and should be considered an important war measure, and we respectfully recommend the immediate passage of said bill by Congress as one of the most effective means of conserving the resources so necessary for the welfare of the country;

RESOLVED FURTHER, That a copy of these resolutions be forwarded to the President of the United States, to each Member in Congress, and to the Secretary of Agriculture.

JUST as we go to press we are in receipt of an important work by Dr. W. H. Bergtold entitled 'A Study of the Incubation Periods of Birds,' published by The Kendrick-Bellamy Co. of Denver, Colorado. It will be duly noticed in the October Auk.



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The Auk

A Quarterly Journal of Ornithology

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NATURAL SIZE.

PHOTO. BY L. W. BROWNELL.

BLACK-THROATED BLUE WARBLER (1 AND 2).

NORTHERN PARULA WARBLER (3 AND 4).

WHITE-THROATED SPARROW (5 AND 6).

SUCCESSIVE SETS FROM THE SAME PAIRS OF BIRDS.

THE AUK:

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VOL. XXXIV.

OCTOBER, 1917.

No. 4.

A STUDY OF SUBSEQUENT NESTINGS AFTER THE LOSS OF THE FIRST.¹

BY H. MOUSLEY.

Plates XIII-XIV.

It is the byways I imagine in any science we may take up, that really keeps our interest in it alive. Even when out for a walk the main object with most people is to get off the beaten track and wander into the fields and lanes, and so with ornithology, the highways after a time become exhausted, and the student turns to the byways wherein he may find some interesting problem the solution of which is not to be found in any text book, but will depend upon his own efforts, and so it transpired that some six years ago whilst wandering down one of these lanes or byways so to speak of ornithology, I came face to face with the following problems, no attempted solution of which I have so far seen in print, viz.:

(1) How many sets of eggs will a bird lay after the loss of the first one.

(2) What time will be occupied in building a new nest and laying another complete set of eggs.

(3) Will the succeeding nests be in similar situations, and construction to the first one, and how far will they be from it.

¹ Read before the Nuttall Ornithological Club, March 5, 1917, by Dr. Chas. W. Townsend for the Author.

(4) Will the eggs in the succeeding sets be alike in markings, shape, size and number, to the first ones.

Now we often take up a subject (and so I did this one) without fully realizing the rocks ahead, for little did I think then that it would take me six years before I could collect even a moderate amount of reliable data to work upon, and even now the first question remains only partly answered, and I doubt if it can be fully and with certainty by any one. After a start had been made, it soon became evident that if my data were to be of any use not only would great care have to be exercised in the selection of the ground, such as small detached pieces of woodland etc., where only one pair of birds of any particular species were domiciled, but I should perforce be obliged to put sentiment on one side for the time being, and take the sets one after the other as they were laid. Lucky the botanist who has none of these distressing things to contend with in the pursuit of his favorite study and consequently never incurs the displeasure of Mrs. Grundy. Even now I can hear that august person saying "*Monstrum horrendum*," but there, I have not much regard for Mrs. Grundy, for after this article has appeared in print I shall, no doubt, later on meet the one arrayed in a beautiful! hat, trimmed with an aigrette plume or bird of paradise, whilst the other will be boasting of the fifty brace of birds he bagged the day before, without the slightest compunction, whereas the taking of my sets caused me considerable distress, which however, is now over as I do not intend to carry my investigations any further along this particular line, as I consider the answers obtained to all but the first question sufficiently convincing to satisfy most people, except perhaps those who are always willing and anxious to push things to extremes, and who would kill hundreds of small birds in their endeavour to prove that they differed in some slight degree from the type, when no doubt a dozen specimens or so would have accomplished the thing equally as well, *i. e.* if there was really anything to accomplish.

However, to return to my subject and the table I have prepared, from which it will be seen that the time covers the years 1911-1916, and that nearly one half of the fourteen birds enumerated belong to the Warbler family. This is merely a coincidence, the family not having been specially selected, as I had to take a suitable case

Species	Year	1st Set taken	2nd Set taken	3rd Set taken	Incubation
Yellow Warbler	1911	June 2	June 16		3 days
Maryland Yellow-throat	1912	June 6	June 15		fresh
Least Flycatcher	1912	June 6	June 16		fresh
Kingbird	1912	June 11	June 24	July 1	fresh, ?
Catbird	1912	June 21	July 2		fresh
Robin	1914	May 16	May 26	June 5	fresh
Chestnut-sided Warbler	1914	June 6	June 15	June 25	fresh
Prairie Horned Lark	1915	April 14	April 23		fresh
Downy Woodpecker	1915	May 22	June 9		fresh
Myrtle Warbler	1915	May 27	June 7	June 18	fresh
Veery	1915	June 2	June 12		fresh
Northern Parula Warbler	1915	June 5	June 26		5 days
White-throated Sparrow	1915	June 5	June 18		2 days
Black-throated Blue Warbler	1916	June 19	July 10		5 days

Species	Time between sets	Nests in similar situations	Nests alike in construction	Distance of nests from No. 1	Eggs alike in markings or color
Yellow Warbler	11 days	Yes	Yes	250 yds.	No
Maryland Yellow-throat	9 "	Yes	Yes	30 "	Yes
Least Flycatcher	10 "	Yes	Yes	7 "	Yes
Kingbird	13 "	Yes	Yes	0 " ¹	Yes
	7 ? "	No	No	65 " ²	?
Catbird	11 "	Yes	Yes	268 "	Yes
Robin	10 "			15 "	
	10 "	Yes	Yes	37 "	Yes
Chestnut-sided Warbler	9 "			24 "	
	10 "	Yes	Yes	37 "	Yes
Prairie Horned Lark	9 "	Yes	Yes	60 "	Yes
Downy Woodpecker	18 "	Yes	Yes	110 "	Yes
Myrtle Warbler	11 "			24 "	
	11 "	Yes	Yes	67 "	Yes
Veery	10 "	Yes	Yes	25 "	Yes
Northern Parula Warbler	16 "	Yes	Yes	60 "	Yes
White-throated Sparrow	11 "	Yes	Yes	13 "	Yes
Black-throated Blue Warbler	16 "	Yes	No	90 "	No
average = 11 "			average = 66 "		

¹ Same tree.

² Baltimore Oriole's nest.

Species	Eggs alike in shape	Eggs alike in size	Average size of sets	No. of eggs in each set	Remarks
Yellow Warbler	Yes	Yes	.66×.50	4	
			.67×.51	4	
Maryland Yellow-throat	Yes	Yes	.69×.50	3	
			.69×.50	3	
Least Flycatcher	Yes	Yes	.65×.52	3	
			.64×.52	3	
Kingbird	Yes	No	.91×.68	3	
			.85×.65	3	
	?	?	?	3	
Catbird	Yes	Yes	.90×.70	3	
			.89×.68	3	
Robin	Yes	No	1.19×.78	4	
			1.10×.76	4	
			1.09×.76	4	
Chestnut-sided Warbler	Yes	Yes	.63×.49	4	
			.65×.49	4	
			.65×.50	3	
Prairie Horned Lark	Yes	No	.82×.58	4	
			.78×.58	4	
Downy Woodpecker	Yes	Yes	.77×.60	5	
			.77×.59	5	
Myrtle Warbler	Yes	Yes	.69×.53	4	
			.70×.52	4	
			.70×.53	5	
Veery	Yes	Yes	.84×.64	4	
			.84×.65	4	
Northern Parula Warbler	No	No	.64×.47	4	only nests ever found
			.61×.47	3	
White-throated Sparrow	Yes	Yes	.87×.62	4	Uncommon sets
			.87×.63	5	
Black-throated Blue Warbler	No	No	.70×.51	4	only nests ever found
			.66×.50	4	

whenever it presented itself, and incidentally the *Mniotiltidæ* seem to have predominated. The headings to the various columns sufficiently explain them I think, but I propose to give some details concerning each bird enumerated, following the order in which they appear in the table.

Commencing with the Yellow Warbler (*Dendroica æstiva æstiva*), I may say that it is of very erratic appearance at Hatley, as may be judged by reference to my 'Birds of Hatley,' Auk, Vol. 33, 1916, p. 178, and the pair now under notice were the only ones seen in 1911. The first nest was found in a little patch of alders bordering a small stream in front of my house, and was placed in the forks of one of these saplings five feet above the ground, the second being in a similar situation only 150 yards further up the stream. As regards the sets of eggs they form one of the few exceptions where neither are altogether alike in ground color and markings, the former in the first set being of a greenish white with bold markings forming a wreath at the larger end, whilst that in the second is of a bluish white, with much less pronounced spots and wreath, the size however, being about the same in both cases. It was not before incubation had been in progress I estimated three days, that I found the second set, although the birds were observed in the neighborhood off and on all the time, but disappeared entirely and were never seen again after the taking of this last set. Notwithstanding the somewhat marked difference in the eggs which consisted of four in each case (the nests being exactly alike in construction) everything else is in favor of, and I have no misgivings in my own mind but that they belonged to the same pair of birds.

The site of the Maryland Yellow-throats' (*Geothlypis trichas trichas*) nests, was on the borders of "the marsh" so often mentioned in my 'Birds of Hatley,' the first one being on the ground at the foot of a very small nut shoot, amongst long grass, whilst the second was hidden in similar material at the foot of a small bramble. The eggs, three in number in each case, are all practically free from spots at their smaller end, whilst being zoned at the larger, and so alike are they in shape, size and markings that when mixed up, one cannot with certainty separate the two sets. Here again after the taking of the second set the birds were never seen again, but in the following year my youngest son, whilst gathering wild fruit, came upon another nest (and set of eggs far advanced in incubation and which hatched out two days later) only a few yards from the site of the first one of the year previous, and I was thus luckily enabled to see and note that these eggs were almost counterparts of the others. I mention this case of the birds returning to the old site, as well as

some others later on, for a particular reason, which will appear hereafter.

The account of the Least Flycatcher (*Empidonax minimus*) presents nothing unusual, both nests being placed in the forks of apple trees (only seven yards apart) in an orchard near my house, the eggs in each case being identical in shape, size and number. The birds were not seen again after the second set was taken, but the orchard has been occupied by a pair (the same I feel sure) every year since, and one of the two trees was built in again on one occasion. Our next case the Kingbird (*Tyrannus tyrannus*) is a peculiar one in many ways. The first nest was in an apple tree ten feet above the ground, and after the first set was taken the birds remained near the site in an undecided kind of way, often perching in the tree and inspecting the nest. Eventually they made up their minds and did a little repairing (made necessary owing to the raids of other birds upon it for building material) and then laid another set of eggs. Upon these being taken they selected an old Baltimore Oriole's nest in a somewhat tall maple in front of my house, where I could not reach them. Here in this strange abode they laid a third set of eggs and brought up a brood. The following year they were back again in the apple tree, and repaired the old nest, and I did not molest them. The markings on the second set are similar to the first, being generally distributed all over the eggs, rather smaller however in size and not quite so abundant at the larger end as in the first set. The shape is similar but much smaller, in fact they are the smallest set of Kingbirds I have found so far, the number however in each case was the same viz. three, and as I only saw three young birds, I have assumed that the third set contained the same number also. I have taken seven days as the time between the second and third sets (there being of course no nest to build only to repair) the female commencing to incubate on that day as near as I could tell.

The Catbird's (*Dumetella carolinensis*) first nest was in a little wood adjoining "the marsh" and was placed in a nut bush overhanging the water. When the first set of eggs was taken they forsook the wood and built a second nest in a somewhat exposed thorn bush 268 yards (the greatest distance recorded) further along the marsh on the same side, but away from the water's edge.

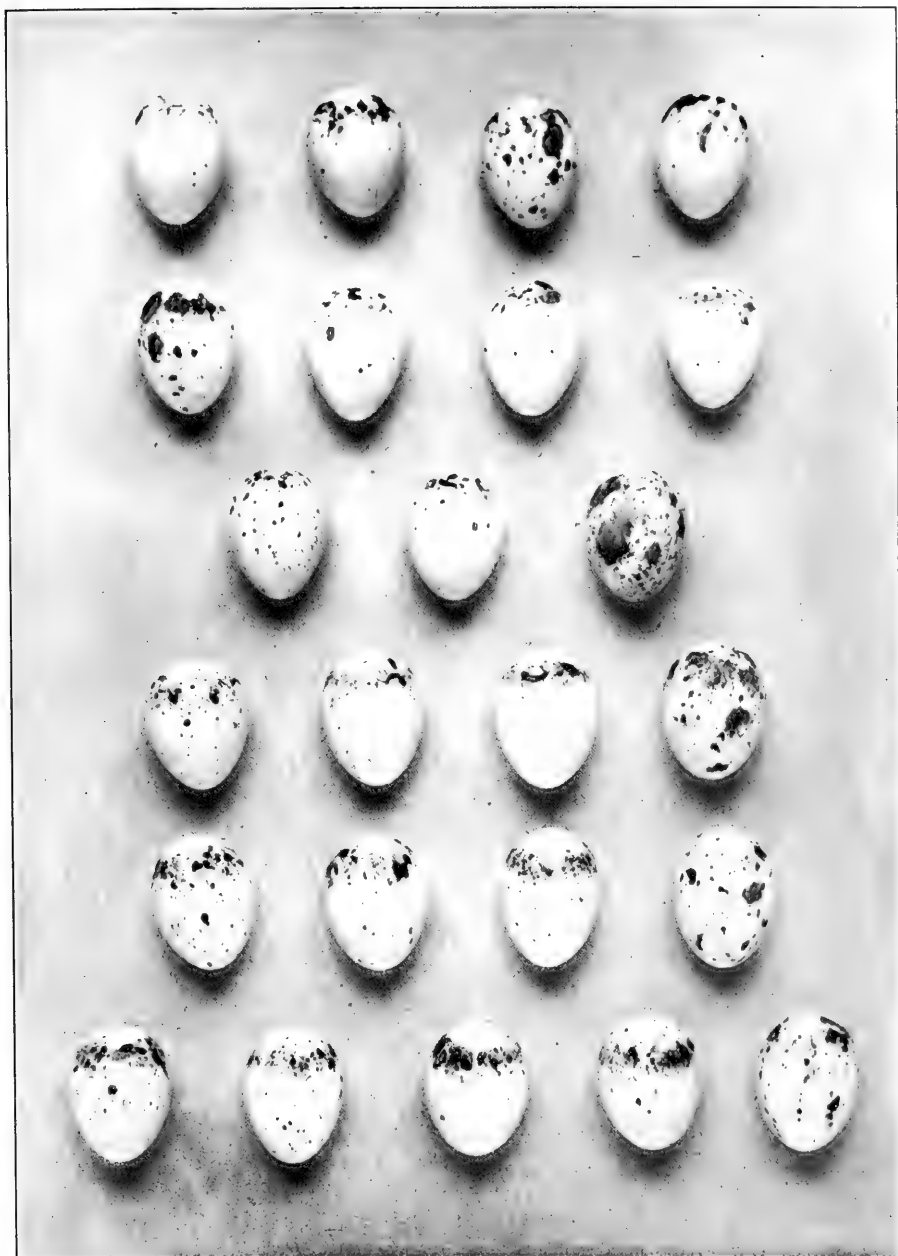
The eggs in each set were three and practically alike in every respect. The birds could not be traced again after the taking of the second set, but the wood has been occupied again more than once, and the very same thorn bush was built in the following year. The nests of the Robins (*Planesticus migratorius migratorius*) were also situated in the little wood just mentioned above, and all three were placed on the fence rails bordering the same. The first set was a large pear-shaped one, being the largest in point of size that I have found so far. The succeeding ones were similar in shape but dropped down a good deal in point of length, and all three contained four eggs. After the taking of the last set, the birds could not be found again. They were certainly the only pair of Robins domiciled at the time in the wood.

The Chestnut-sided Warbler (*Dendroica pensylvanica*) is the next one on the list, and is interesting in many ways, if only for the reason that it was the first time I had come across a nest or even noticed the species here, the only others seen that year being a pair at Ayers Cliff some six miles away. The site of the three nests was on the roadside, the first being in the forks of a small nut bush three feet above the ground, the second being in a similar situation 24 yards to the south on the opposite side of the road, whilst the third was on the same side as the first, in a raspberry cane, 37 yards to the north, all three nests thus being within a space of 61 yards. They were identical in construction, one peculiarity about them however being that fine fir twigs were partly used in their outward construction, a material I have not noticed in subsequent ones found. The eggs are handsomely and somewhat boldly marked and wreathed at their larger end, the smaller or pointed end being generally free from spots with one exception, that of the last or eleventh egg laid, which is not only the largest of the series, but is more heavily blotched at the larger end, as well as finely speckled all over the smaller or pointed end than any of the others. If this egg is removed the remaining ten are practically counterparts of one another, although the average size of each set varies a little, the first curiously enough being the smallest of the three, whilst the third is the largest in this respect, but the smallest in number of eggs (which one would naturally expect in a third set) there being only three instead of four as in the other

two. After the taking of the third set the birds were not seen again, but in the following year a pair were noticed in the vicinity, but I failed to find their nest. The next year (1916) however, they were there again, and this time I found the nest and set of eggs (heavily incubated) which were very similar to those of 1914.

The Prairie Horned Lark (*Otocoris alpestris praticola*) is another interesting species, and the two nests under notice together with some others have been fully dealt with in my paper on the breeding of the species at Hatley (see Auk, Vol. 33, 1916, pp. 281-286). They were both on the ground in a large field near my house and were exactly like one another in construction, both having the "paving" peculiarity, to draw attention to which the above article was specially written. The eggs were all alike as regards shape and markings, which latter consisted of very minute specks over the entire surface, with a somewhat pronounced zone at the larger end, the second set however being smaller than the first as regards dimensions, but both containing an equal number of eggs viz.: four. After taking the second set the birds forsook this particular field (much to my disappointment as I had hoped to still further corroborate the period at which the "paving" to the nests is added) but some were seen about the district until June 22. The following year (1916) however another nest and set of eggs was found in this same field by my youngest son on May 30, this nest also exhibiting the aforementioned peculiarity, there being no less than 46 small pieces of cowchips, stones and lichen, making up the "paving" or banking, which fortunately with the nest had not been disturbed in any way, although the eggs had been abstracted by someone, before I had an opportunity of seeing them a few days after.

The Downy Woodpecker (*Dryobates pubescens medianus*) presents nothing specially interesting, the first nest being in a dead elm tree eighteen feet above the ground, the entrance hole being one inch in diameter, the extreme depth eight inches and the average width two and one half inches, the second one being almost identical, but only six feet above the ground, in a dead poplar stub. The eggs in both cases are all practically alike, the second set being just a shade less in thickness. No further nest could be located after the second set was taken, but the elm tree was made use of again the following year, a new hole being excavated on the oppo-



NATURAL SIZE.

PHOTO. BY L. W. BROWNELL.

CHESTNUT-SIDED WARBLER (1, 2 AND 3).

MYRTLE WARBLER (4, 5 AND 6).

SUCCESSIVE SETS FROM THE SAME PAIRS OF BIRDS.

site side of the tree, only a little lower down, but the birds were not disturbed.

The Myrtle Warbler (*Dendroica coronata*) coming next, forms a specially interesting case. The species is a rare breeder here and I have only found the nest of one other pair of birds so far, and that was some distance from the present site, which was on the borders of a somewhat extensive wood. Here in a small fir, three feet above the ground the first nest was found, only four yards away from the site of the previous year's one, which contained four young birds when I found it. The second one being 24 yards to the south of it, also in a fir and three feet up, whilst the third was 64 yards likewise to the south and in a similar situation only six feet up, all three nests being close against the trunk, and fac-similies of one another as regards construction. The sets present many interesting features, the third one being not only the largest as regards dimensions, but also as regards the number of eggs, there being five instead of four as in the other two cases, a most unusual thing and quite contrary to what one would expect, although curiously enough my friend Mr. L. M. Terrill, writing in the 'Ottawa Naturalist' for November 1904, mentions the fact of his having come across a second set of this same species, in which the number of eggs was five as against four in the first set, the markings however being the same in both cases. All the eggs are zoned at the larger end, the rest of the surface being pretty free from markings of any kind, with the exception of one egg in each set (the last one laid as I was careful to note) which not content with being lightly blotched all over, is also the largest egg in each set, just as was the case in the last one laid of the third set of the Chestnut-sided Warbler. It is an interesting and curious fact and one which I am constantly coming across that the last egg laid of a set, often has some peculiarity about it, being different from the rest as regards either the ground color, markings, or size. After taking the third set the birds were not noticed again, but in the following year (1916), I came across a male in this same locality on June 21 and again on July 9, on which latter date it had food in its beak, so I concluded there were young about, but I failed to find any nest. The Veery (*Hylocichla fuscescens fuscescens*) is not plentiful here, so when a nest was found in a little willow swamp it seemed a suitable

case, and the first set was taken, the second being found ten days later only 25 yards away from the first. Both nests were on the ground in tufts of grass in the center of little hummocks, and each contained a set of four eggs, identical in color, shape and size. After the loss of their second set the birds forsook the wood, and were not seen again.

We now come to the Northern Parula Warbler (*Compsothlypis americana usneæ*) a rare summer as well as transient visitor here, in fact I have only seen four examples so far, the present pair in the summer of 1915, and an adult female and immature in the fall of 1916. The two exquisite little nests were located in a somewhat extensive wood where in a limited area long streamers of usnea lichen hang from a few fir trees, and it was in these that they were found, the first 35 feet, and the second 25 feet above the ground, both pensive and composed entirely of usnea lichen, and lined with a little plant down, the first containing a set of four pear-shaped eggs, and the second, one of three, the latter not only being less in number, but also smaller in size, the spots however being rather more numerous, a little larger and forming a more decided zone at the larger end. They were also incubated about five days as near as I could tell, which would allow an interval of sixteen days between the sets, this time fitting in very well with that occupied in building the first nest and laying the four eggs, which was seventeen days, as I was fortunate enough in observing the birds on the day, or day after, the nest was commenced. After the second set was taken they disappeared and I never saw them again, nor did they return to the locality the following year.

The first set of the next species, the White-throated Sparrow (*Zonotrichia albicollis*), was found very close to the site of the first nest of the Northern Parula Warbler, and from its surroundings did not seem to offer a very good case, in fact I should not have taken the set, had it not been for the large size and exceptional beauty of the eggs, the ground color of which, especially when fresh, being of a pronounced greenish blue, heavily blotched with rufous brown and black scrawling, the latter of a pronounced type for this species, in fact more like that of a Red-winged Blackbird, whilst the size is beyond the average. I consider this by far the rarest type in White-throated Sparrow's eggs. After the taking of

this set, I visited the locality on many occasions in the hope of securing another set, but it was not until June 18 that I was fortunate in flushing the female off another (which I estimated was about two days incubated) only thirteen yards from the site of the first. These were counterparts of the first, just a shade thicker, and breaking the general rule by being five in number, instead of four as in the first set. Another interesting feature (already remarked upon) is that one egg in each set (I can only positively say it was the last one laid in the first case, as incubation had commenced as already mentioned in the other before I found it) differs from the others, the markings being much smaller and all over the surface with no pronounced blotches or scrawling of any kind. After the taking of the second set, I was unable to locate another nor did I come across the birds in the neighborhood again.

We now come to the last, but by no means the least interesting example in the table, that of the Black-throated Blue Warbler (*Dendroica caerulescens caerulescens*) and one which I was at first uncertain whether to include or not, on account of the great difference in the size and construction of the nests, as well as in the shape, size and markings of the eggs, but after a careful weighing of the pros and cons of the case, I have come to the conclusion that I was really watching the same pair of birds and have therefore included them. The first nest was placed in the forks of a small maple sapling three feet above the ground, the second being in a similar position but only fifteen inches up, and ninety yards east from the site of the first, the outside depth of which was $4\frac{3}{4}$ inches, and was composed for the upper part of woven cedar or grape vine bark, whilst the lower portion was of loose white birch bark, the lining consisting of slender rootlets and some hair. The second was only $2\frac{1}{2}$ inches in depth and was composed almost entirely of rotten or pithy wood (so characteristic of the species) held together by fibrous materials, and lined with fine black rootlets and black and white hair. The first set of eggs was pear shaped and minutely, spotted, whilst the second were more oblong and boldly marked the thickness however of each being practically the same, the difference arising in the length as will be seen from the table, and in many ways they greatly resemble the two sets of the Northern Parula Warbler especially in shape, the first in both cases being

pear shaped, whilst the second are shorter and oblong, facts I had not noticed previous to the preparation of this paper. After taking the second set the birds were not seen again, nor was any other nest found in the locality, even when searching after all the leaves were off the trees.

It only now remains to sum up the evidence and arrive at the answers to our questions, to do which I must ask my readers in the case of the first one, to assume for the moment that the second or third set of eggs (as the case may be) laid by the birds were the last ones for that season. This being so, the table gives us the following results, viz.:

(1) That 70% of the birds laid one set of eggs only after the loss of the first one, the balance or remaining 30% laying two.

(2) That the average time occupied in building a new nest and laying another complete set of eggs is eleven days.

(3) The evidence in this case all points to the fact of the second or third nest being in a similar situation to the first one, the average distance from it being sixty-six yards.

(4) Here likewise the evidence is all in favor of the eggs in succeeding sets being of the same color, markings and shape as the first ones, but as regards size 57% only appear to be the same in this respect, the remaining 43% differing, and in the matter of numbers 70% of the sets contain the same as the first, whilst the balance or 30% differ, this difference apparently being about equal, half consisting of more, and half of less than the original set.

Now if it were possible that the answer arrived at to our first question, "Might be the be-all and the end all; here," then we'd jump, not the life to come as Macbeth says, but the suppositions to come, for suppose these second or third sets as the case may be, are not the final efforts of the birds at reproduction, what then? Why, so far as I can see no satisfactory answer will ever be forthcoming, for should the birds after leaving the site of their second or third ventures, betake themselves to a fresh locality say a quarter of a mile or more away, how could I or anyone else be able to locate them again, and even if it were possible to do so, and we could secure that set also, they might move off again, and so the thing would go on ad infinitum, except for the reason that we know in the case of wild birds they only lay at a particular season of the year,

but for just how long that season lasts or the reproductive faculties of the birds remain active I am unable to say. Perhaps doctors from their special training may be able to throw some further light on the subject, in the meantime I have formed an opinion of my own (perhaps erroneously) that when birds forsake the vicinity of the nesting site after the loss of their second or third set of eggs, they do so because the power or natural instinct of reproduction has reached its limit, and is over for that particular year. In support of this theory, I have constantly referred to the fact of so many of the birds returning the following year to the old nesting site, and in the case of the Kingbird, Downy Woodpecker and Catbird, actually occupying the same trees and bush again. Now is it reasonable to suppose that they would do this, if after deserting the site the previous year, they had found a fresh one, and brought up a brood? Surely they would have returned to that site with its pleasant associations, rather than to the one with its unpleasant recollections.

In conclusion it seems to me that the more and more we go into these bird problems, the more is the fact brought home to us of the very little we really know concerning them, and at best our solutions in most cases can only be approximate ones after all.

SOME ALASKA PENINSULA BIRD NOTES.

BY CHARLES A. GIANINI.

THE wandering bird lover if fortunate sometimes finds himself in a bird paradise — such was my good luck last Spring when I landed in Stepovak Bay on the south side of the western end of the Alaska Peninsula. My time while on the mainland was pretty well taken up with hunting the big brown bear of that country, but I always had a welcome eye for birds and now that I am home in the east and the trip in retrospect it is questionable whether bears or birds gave me the most pleasure but certain it is that one without the other would have left a void.

The country surrounding this great bay is inhabited for about six months every year and then only by a limited number of trappers who make their homes on the outlying islands and come here in the Fall and leave in the Spring. The shore of the main bay is indented by smaller bays and each has its trapper's shack or barabara, and as the men usually trap in pairs the population amounts to about two exclusive of any women and children for each bay. The trappers arrive when most of the birds are either gone or travelling south and leave when they are coming in so that the birds of this big section of country are practically unmolested save by some of the predatory members of their own family and a few four-footed hunters. The country remains wild and in its original state and offers every attraction to breeding birds in the way of shore, grass, shrubbery and cliffs; everything but large trees of any kind, for these last do not grow on this part of the peninsula.

Two of us and our dunnage on the 25th of May were landed on the beach at daybreak and I was immediately treated to the spectacle of a couple of jaegers worrying a gull but the arrival of gull assistance put the former to flight. We hunted from two camps, the main one a cabin a couple of hundred yards from the sandy beach and the second a tent pitched on the bank of a river five or six miles inland. Both were in great flat valleys surrounded by high snow-covered mountains with glaciers and a steaming volcano for variety.

The country surrounding the main camp is very flat and the whole intersected by a number of glacial streams and dotted all over with ponds; in places there are long stretches of sand and gravel and many marshes and patches of tundra. A good part of this is made land and is still in process of formation as is plainly shown by the successive old beach lines which extend inland quite a distance. That the big mountains are gradually breaking up and wearing away is perceptible and a fine example of one method could be seen from the camp. About five miles away stands what was at one time a volcano but the side facing the camp had been blown out and down into the valley leaving exposed a great core of sulphur which however, is protected from grasping hands by an intervening river of ice.

Alders and willows follow the river courses and of the latter there must be five or six varieties from a low creeping shrub to a fair sized tree. A variety of grasses grow here both tall and wide of leaf. Flowering plants abound in season though some are very minute and hug mother earth for warmth and comfort. Many varieties of plants would be recognized by name but not in substance, however the marsh marigold was a pleasant surprise one day found blooming early as it does in the east. A beautiful variety of the wild geranium was everywhere abundant in July. One day while laboring up the verdureless side of a bleak mountain I found growing in the slides of rotten stone a few groups of a brave little plant some with red and others with yellow flowers surrounded by rounding leaves and the whole not over an inch in height; they proved to be of the *saxifraga* family. In some places violets were as plentiful as in our woodlands in Spring and the day I shot my largest bear I wore a boutonniere.

The great coarse cow parsnip was very common and the dry stalks furnished the kindling for our fires.

In season a choice of berries is offered from the crow berry nestling close to the ground to great luscious salmon berries half as large as your thumb. Ferns are there in quantity and variety from tall, stout brakes to a very delicate *Filix fragilis*, but none appealed to me more than our own little polypody which I found growing in the sides of great cliffs.

In bear hunting there are many enforced waits and these intervals

when weather permitted were devoted to bird observations and the surprises and treats were many. The first morning ashore after getting our duffle and outfit under cover and arranged, I went afield and for a time I saw such a variety of birds that I wished for a pair or two of extra eyes. Some birds I had seen before but a few were entirely new to me and as I did not collect any there were several I was unable to name. The following list is of birds positively identified — Holbøll's Grebe, Red-throated Loon, Long-tailed Jaeger, Herring Gull, Arctic Tern, Mallard, Scaup, Northern Phalarope, Least Sandpiper, Black Turnstone, Willow Ptarmigan, Bald Eagle, Savannah Sparrow and Pipit. Never before had I fallen into such company and such a number in so short a time and limited extent of territory.

As I journeyed about the country and bay my list of birds increased so that I shall name them in accordance with the A. O. U. classification:

Colymbus holbøelli. HOLBØLL'S GREBE.— I had seen before but not in his spring feathers. I first saw two in a pond and on June 17 a flock of fifteen swimming in the bay. I found no signs that they breed here.

Gavia pacifica. PACIFIC LOON.— Quite common and seen more often off the beach and in the rivers than about the ponds. I have no doubt it breeds here as it was noticed almost every day up to the 12th of July when we left for the westward in a small boat.

Gavia stellata. RED-THROATED LOON.— Was very common and breeding; I saw as many as five at a time on a small pond. They are passing continually back and forth from the ponds to the big bay and in flying the outstretched head and neck are bent at a slight downward angle to the body. They are very noisy, have a coarse quack on the wing and a jeering, *graah, graah*, on the water. They keep up their calls away into the night but at their breeding period daylight continues to almost midnight. These loons are tamer and easier to approach than the other variety.

Lunda cirrhata. TUFTED PUFFIN.— Often seen in the bay. First noted in Cook's Inlet on the 20th of May.

Brachyramphus marmoratus. MARBLED MURRELET.— Seen in the bay singly and in pairs. Not very wild and allowed a close approach in a row boat.

Cephus columba. PIGEON GUILLEMOT.— Common about the bay and not very wild.

Stercorarius parasiticus. PARASITIC JAEGER.— Quite common. I collected one in the dark color phase.

Stercorarius longicaudus. LONG-TAILED JAEGER.— They are com-

mon and I sometimes saw four or five at a time around the small ponds. I collected one in the light color phase which when held up by the feet vomited crow berries.

Rissa tridactyla pollicaris. PACIFIC KITTIWAKE.—They were nesting on a rocky islet in the bay and had their nests on shelves and tops of rocks as close together as they could be placed. They allowed me to make a close approach and gather a mess of eggs which our menu was sadly in need of. On June 17, the nests contained some two and others three eggs and part of them we found to be in the process of incubation. As we approached the island a half dozen of cormorants sat on the rock looking for all the world as some one has remarked "like black bottles."

Larus glaucescens. GLAUCOUS-WINGED GULL.—Were here but in no great numbers.

Larus schistisagus. SLATY-BACKED GULL.—I noted but one or two here.

Larus argentatus. HERRING GULL.—This gull has hardly ever been out of sight since leaving Seattle. They followed the steamers, the various canneries had immense colonies and here the beach and ponds were alive with them. They had selected one pond with boggy shores and small islands for a breeding ground. On May 27 I found on the bank two nests containing eggs — one with two and the other three eggs. There were probably more nests on the little islands but I was unable to reach them. On June 29 there were some young on the pond.

At a salmon saltery where I spent a few days after the 15th of July I watched these gulls feeding. The salmon were split and dressed on a staging over the water close to the beach and all undesirable parts tossed overboard and the great bunches of eggs hardly reached the water before the gulls would have them and two or three gulps were sufficient to put them out of sight.

Larus brachyrhynchus. SHORT-BILLED GULL.—This gull was here and associating with the Herring Gull. Was nesting at the same pond.

Sterna paradisæa. ARCTIC TERN.—Positively the most graceful bird I saw on this trip and the only representative of the family here. They were here in limited numbers but never failed to make their presence known either by their rasping cries or their acrobatic flying. They have a habit of remaining in a fixed position in the air supporting themselves entirely by their vibrating wings with the balance of the body stationary. They do this over both land and water and from this position often dive into the water for fish disappearing entirely for two or three seconds at a time. I noted that they did not always catch their prey.

They must breed here for I saw them almost every day of my stay.

Fulmarus rodgersi. RODGER'S FULMAR.—This bird while undoubtedly coming into the bay probably has no justification for being introduced here but the capture of one by rather unusual methods is my apology. On the 26th of July while the coast guard steamer 'Unalga' in which I was travelling to Seward, was to the eastward of the Shumagin Island a young

fulmar came aboard into the fireroom by way of a ventilator. The bird was very tame and showed no fear of us and was given its freedom after we passed on its identity. One of the officers called it a "scupper bill" — a new name to me.

Phalacrocorax auritus cinnatus. WHITE-CRESTED CORMORANT.— Those I saw here I took to be of this variety. They were frequently seen about the bay and often high up, evidently travelling across the peninsula either to or from the Bering Sea side.

Anas platyrhynchos. MALLARD.— Here in good numbers and breeding. Every inland trip we made we found these ducks in the marshes and about the ponds and streams.

In front of our home camp was a pond with sedgy shores which was visited by a great variety of ducks and Mallards often came here early in the morning to feed.

Mareca americana. BALDPATE.— On the 2nd of June near our camp on Big River, I saw a pair of these ducks, the only ones I noticed.

Nettion carolinense. GREEN-WINGED TEAL.— Common and breeding.

Dafila acuta. PINTAIL.— Common and breeding. Saw my first one in a pond in front of camp on May 29; and from the 17th of June, when we returned there, until the 12th of July, a male and two females made the pond their headquarters — feeding and napping there.

On the 4th of July, six lively ducklings appeared on the pond and some were seen on other days after this. I took them to be young Pintails, yet I never saw them with the old birds nor did the latter seem to pay any attention to them. Mallards and Green-winged Teal also visited this pond but not to such an extent as the Pintails and this causes me to think that the young were of the last named species.

Marila marila. SCAUP DUCK.— Very common and breeds.

Histrionicus histrionicus. HARLEQUIN DUCK.— Fairly common. Seen on the rivers particularly near the mouth and among the rocks along the shore of bay. The first I saw were at Chignik on the 23rd of May; three of them in the gentle surf close to the sandy beach. While they are fairly watchful I found I could make a close approach by careful management.

Somateria v-nigra. PACIFIC EIDER.— Not very common. I saw but a few about the rocks close in shore.

Oidemia perspicillata. SURF SCOTER.— I saw a large raft of these Ducks in the bay one day in June.

Lobipes lobatus. NORTHERN PHALAROPE.— This is one of the most common and interesting of the smaller birds. Every pond had a pair or more. They could be seen almost any day on the pond in front of our camp. I found no nests nor saw any young, yet these birds breed here. They are unsuspicious and allow very close approach. They are very graceful in the water, sit very high and seem to move about without any effort. I did not see them do the "circling" act but noticed that

they swing right and left as they sail along picking up particles of food from the surface of the water. They also have a habit of bobbing the head forwards and backwards as they proceed. They rise from the water with great ease. Along the beach they fed close to the water and seemed to jump over the incoming ripples. They sing a *tweet-tweet* note on the wing which is often heard before the birds can be seen or located. These birds and the other two species of the same family are exceptions to the general rule in that the females are slightly larger and more brilliantly colored and while they lay the eggs the males incubate them.

I observed that the necks of these birds are more slender and delicate-looking than is usually shown in drawings.

Pisobia minutilla. LEAST SANDPIPER.—Common and breeding here. On the 7th of June I found a nest containing 4 eggs on the tundra; the female jumped off at my near approach and tried to draw me away by the usual feigning methods. Nest was a depression in the ground lined with grass and small round leaves of some shrubby plant.

These birds are very tame and have a twittering song in the air and when on the ground. They spend considerable time feeding on the beach.

Ægialitis semipalmata. SEMIPALMATED PLOVER.—I saw my first one on the 26th of May and from that date on until we left they were very common. They are very tame and show little fear of man. Often found along the beach and further inland but never far from water. I watched one feeding along the beach; he would run a yard or two, stop and pick up some morsel, and repeat the performance which was continued for some distance.

One day while resting on a sand bar close to a stream I had a bird come very close and circle completely around me at the same time uttering its call notes. Soon a second bird, its mate, appeared, answered the call and came near but did not repeat the performance. This happened on the 16th of June and caused me to think I must be near the nest, but I was unable to find it.

Arenaria melanocephala. BLACK TURNSTONE.—On the 25th of May I saw my only one, working about the rocky shore of a pond.

Lagopus lagopus lagopus. WILLOW PTARMIGAN.—They are fairly numerous on the lower levels but do not range very high on the mountains.

On the 7th of June I found a nest containing seven eggs. My guide remarked that it was unusual that in all our travels we did not find another nest. There are many foxes and wolverines here and they undoubtedly take a rich toll.

In Newfoundland I do not recall ever seeing a ptarmigan perched in a tree of any kind — here it was common to see them in alders and willows.

Lagopus rupestris rupestris. ROCK PTARMIGAN.—On the mountains they are occasionally met with but do not seem to be very abundant. When climbing a mountain if any birds are about they soon make their presence known by their coarse notes which are easily distinguished from those of the other species.

Archibuteo lagopus sancti-johannis. ROUGH-LEGGED HAWK.— This was the only hawk that I was able to positively identify — I collected one. They were in fair numbers and nesting on the cliffs both overlooking the bay and further inland.

Evidently there is mutual respect between them and the Bald Eagle, for I have seen their nests on the cliffs in close proximity to each other. They were very noisy at times.

Haliaëtus leucocephalus alascanus. BALD EAGLE.— It was in evidence along the coast all the way from Cordova; when traveling along near the shore a white spot in the edge of green timber usually produced an eagle. Here they were numerous and from the home camp I could always see them along the beach or the banks of the rivers. Many codfish were stranded on the sands and afforded an abundance of food for eagles and gulls and they were generally closely associated. They nested on the cliffs overlooking the bay and further inland as well, but always near water. On the 31st of May I found a nest containing two eggs. On the 2d of June I found another nest containing only one egg; this nest was a mere depression in the heavy grass situated on the top of a butte inland and overlooking Big River. It was easily approached. It never contained more than the one egg and on the 15th of June this was destroyed by gulls. On the same day I saw two gulls attacking an immature but large eagle and one of the former gave a wonderful exhibition of flying — making a complete downward somersault in mid-air.

On the 28th of June I found a nest on the cliffs overlooking the bay containing two young which I photographed. They were as large as fair sized chickens and covered with grey down in appearance like wool. They looked well fed but were very logy and I was obliged to stir them up to make them look animated. The nest was clean but close by were the bones and remains of quite a few water birds. The carcass of the first bear obtained was left in an open park surrounded by ridges and whenever we passed that way we were certain to find a gallery of eagles and ravens. I learned that eagles were sometimes shot by the people up here for the plumes found on the body under the wings.

Cryptoglaux funerea richardsoni? OWL.— The guide told me of a small owl he had often seen in the alders and willows but I was never fortunate enough to see one. On several occasions late in the afternoon, I heard the notes of some species of owl and I thought it might be the Richardson's.

Pica pica hudsonia. AMERICAN MAGPIE.— This bird quickly made his presence known about camp and compelled us to protect any fresh meat we desired to keep for ourselves. The guide set baited rat traps for them but they proved too wary to be caught that way. Their bulky nests were often seen in the alders. Some fully feathered young were common among the rocks along the beach early in July and easily caught by hand.

Perisoreus canadensis fumifrons. ALASKA JAY.— One day in June I saw four birds at one place and they were the only ones I saw.

Corvus corax principalis. NORTHERN RAVEN.—Fairly common; they traveled up and down the rivers. Their wing movements are very noisy when flying and I could always tell when a Raven passed overhead without looking up.

Acanthis linaria subsp.? REDPOLL.—I was disappointed in seeing but one of these birds.

Plectrophenax nivalis nivalis. SNOW BUNTING.—Up here this is a different looking bird from what I see home in the winter — it is a beautiful white and black bird and naturally not found in big flocks as we know it. It is fairly common on the flats and also well up the mountains and no tamer here than further south. I was never able to get close enough to enjoy its little song.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.—On the flats around the home camp in May, June and July the birds were plentiful and I never could walk about without seeing the male sail up in the air a short distance and sing his song; sometimes descending as he sang. They breed here.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW.—Is here in abundance and seen on the tundra and flats and also on the cliffs and rocks of the shore. Breeds.

Zonotrichia coronata. GOLDEN-CROWNED SPARROW.—Fairly common here but seen more frequently inland than near the shore. I heard them first on the 28th of May; notes are suggestive of those of the White-throated Sparrow. They fed about the camp.

Passerella iliaca unalaschensis. SHUMAGIN FOX SPARROW.—A few seen.

Hirundo erythrogastra. BARN SWALLOW.—This was the one bird which brought back most vividly to mind the thoughts of home and to find it here in July optimistically starting a nest was a pleasant treat. On our return to the home camp on the 17th of June I noticed about the place a pair of these birds and one Bank Swallow but in a few days the latter disappeared leaving only the mated pair. Our shack was protected in front by a partially closed veranda and the swallows were in and out continually and in the early morning their twitterings were the first sounds we heard. The cabin proper had several windows, the casings of which had never been sealed up on the outside so that at the top was a long narrow shelf and right after the 1st of July the birds started a nest on one end of one over against the side upright; I only had to raise myself a few inches to overlook the building operation. One of the birds, the female, did all the work; she gathered the mud, made the variously shaped pellets and laid by a small supply of dried grass. First was laid a course of the pellets outlining a space slightly longer one way; then the bird made a number of pellets varyings in size which she placed to one side possibly to dry and furnish a handy stock so that when she got further along she could proceed in laying up the walls without having to wait for materials.

Unfortunately this nest was never completed; the Magpies bothered

the Swallows so they finally gave up the task and moved to other quarters. In the early days before houses and barns were plentiful and afforded nesting sights Barn Swallows nested in caves and caverns and as houses and huts are few and far between here, possibly this pair of birds reverted to primitive ways and resorted to a cave of which there were many in the cliffs along the shore.

The two birds were often together but I only saw the one do any work.

The late date at which the nest was started might cause one to think that they had already raised one family but I doubt this as I never saw more than the two birds.

Riparia riparia. BANK SWALLOW.—I only saw the one previously mentioned.

Dendroica æstiva rubiginosa. ALASKA YELLOW WARBLER.—The guide collected one and I think I saw a few more. Not very common.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.—Fairly common and I often saw them after the 1st of June. Breeds.

Anthus rubescens. PIPIT.—This bird is supposed to breed on high ground but I found it occasionally on the lowlands. Breeds.

Cinclus mexicanus unicolor. WATER OUZEL.—This little bird proved one of my big disappointments. On my way to Alaska I had talked with my guide, who accompanied me, about these birds and he assured me I should find them on almost every stream; in fact they were so plentiful that in his trapping operations he shot them to bait his traps. I was continually on the watch for them and one day when I was very busy with a bear skin in a swift river I caught a hasty glance of one which proved the only one of the trip.

Hylocichla guttata guttata. ALASKA HERMIT THRUSH.—Noted this bird first on the 5th of June and saw and heard it occasionally afterwards. The foggy depressing weather may have had some effect on the bird's spirits but the song I heard could not compare with that of our bird in the Adirondacks.

Penthestes cinctus alascensis. ALASKA CHICKADEE.—One day while hunting inland we lunched in the meagre shelter of some alders and while there several birds put in an appearance. They looked and acted about the same as our eastern Black-cap. These were the only ones I saw.

THE SUMMER BIRDS OF THE ST. MATTHEW ISLAND
BIRD RESERVATION.

BY G. DALLAS HANNA, U. S. BUREAU OF FISHERIES.

THIS Bird Reservation, officially known as the Bering Sea Reservation, is located in Bering Sea about 220 miles north of the Pribilof Islands. It consists of three islands, which named in order of size are St. Matthew, Hall and Pinnacle Islands. These were made a bird reservation by Executive Order of February 27, 1909. Owing to the distance of the group from the regular channels of travel, opportunities for naturalists to visit it rarely occur. It is barren, treeless, uninhabited and surrounded by dangerous and poorly charted waters.

Through a request of the Biological Survey of the Department of Agriculture I was detailed to make an examination of the Reservation in June 1916, but owing to the ice pack remaining in that vicinity until after the middle of the month this was impossible. In July, however, the trip was made, and six days were spent on St. Matthew and Hall Islands. Arrangements were made with the Coast Guard Service for transportation and we left St. Paul Island on the morning of July 7, on the Cutter *Unalga*, Captain F. G. Dodge in command. The next morning the spires of Pinnacle Island were in full view and a landing was made near Cape Upright of St. Matthew at noon. Between then and the 12th almost the whole of this island was examined, and on the 13th we went to Hall Island. Pinnacle Island was not visited on account of adverse weather conditions.

I wish to express my appreciation of the favors extended me by the Coast Guard Service and especially to Captain Dodge and the crew of the *Unalga*, every man of whom willingly and eagerly assisted me on every occasion.

St. Matthew Island is about 22 miles long by two to three miles wide and is slightly curved to the north. Its mountains rise as high as 1800 feet and are weather worn and smoothly eroded in most cases. Some of them have mosses and lichens growing to the tops, but others, especially in the center of the island, are entirely

devoid of vegetation. The rocks forming these latter are weathered into very small fragments, set edgewise and close together and making a natural pavement.

Most of the valleys are covered with reindeer and other mosses and in many favorable places there are true tundra bogs. Vegetation other than mosses and lichens is dwarfed and scant in most places. The rank growths of wild parsnip and wild rye found on the Pribilofs are entirely absent. There are a large number of fresh and brackish water lakes on the island, many of which have been formed by the sea building dykes across from one headland to another. The tide ebbs and flows in some of these, forming lagoons. There are a large number of fresh water streams, many of them a dozen feet across. They wind through the tundra swamps with undercut banks which form ideal spawning and feeding places for the innumerable trout found here.

The mountains are cut into by the sea on every side of the island, making long stretches of towering cliffs, between which the sea has built up beaches of such an extent as to give the impression that the island is much older than the Pribilofs. These cliffs display the most wonderful geological formations I have ever seen. There are beautiful blues, yellows, greens and bright reds in layers or dykes and in places throughout the mass run seams of pure white calcite from two to twelve inches thick.

Evidences of comparatively recent earth disturbances are seen about two miles below Cape Glory of Russia on the south side of the island. The earth and cliffs are torn and tumbled in the greatest confusion. New slides are seen and the beach line boulders are not much rounded. In some places rocks are constantly falling making it dangerous to go beneath the cliffs. Here are nodules from two inches to two feet in diameter composed of a green mineral-like jade, and there are numerous seams in the country rock of banded agate. There is one cliff half a mile long of undoubted sedimentary origin. Numerous fossilized trees some two feet in diameter are embedded near the base. All seen were in a recumbent position and were as black as anthracite coal.

The large number of cliffs with their grand scenic display are notable as the nesting places of countless sea birds. Of all the places I have visited St. Matthew is rivalled in this respect only by

that incomparable bird cliff on St. George Island, but the ledges on St. Matthew are more nearly perpendicular and thus afford less favorable nesting cites.

The lines of drift wood indicate that the island as a whole has had a recent elevation, or that some enormous seas which did not reach the Pribilofs carried the logs high above tide mark. Some logs are about 100 feet above the calm weather water line.

Hall Island is entirely bold and rugged and has no true beach. In fact the top of the island can only be reached in a few gullies where small streams empty into the sea. The vegetation and character of the upland appeared similar to St. Matthew.

Pinnacle Island is wedge shaped and has towering spires projecting high into the air. It is so steep and rugged that snow does not lie upon it. Probably the base of the cliffs might afford a landing place in calm weather but whether or not the walls of the island could be scaled was not ascertained.

The action of the ice on these islands seems inconsequential. No worn pebbles were found back of the beaches nor are there glaciers present. Snow probably remains most of the summer in some of the canyons, since it was very deep in places in early July.

Through the kindly interest of Dr. A. K. Fisher of the Biological Survey I am enabled to incorporate in the present list certain hitherto unpublished notes taken by him on these islands on July 14 and 15, 1899, while a member of the Harriman Expedition. Dr. Fisher's notes, which include four species additional to those observed by myself, are inclosed in brackets, and are followed by his initials.

LIST OF BIRDS OBSERVED.

Gavia stellata. RED-THROATED LOON.—The wailing notes of a single bird were first heard reverberating from the mountains surrounding a lake about the middle of the north shore of St. Matthew. It and two others were later collected and the species was afterwards observed in several of the lakes. It undoubtedly breeds here but efforts to locate the nests were unsuccessful.

Lunda cirrhata. TUFTED PUFFIN.—Many nesting colonies of this species were found on favorable cliffs on both the islands visited. A precipitous rock lying off the northwest end of St. Matthew was scaled and the burrows of this species found undermining the sod and moss com-

posing the summit. Some of their burrows were twenty feet long but so shallow that they could be broken open easily and often bird and egg would be found at the end. A semblance of a nest is constructed of moss and feathers in a shallow depression near the end of the burrow. These burrows are used year after year, usually with a small amount of excavating annually.

Fratercula corniculata. HORNED PUFFIN.—Horned Puffins nest in large numbers on every favorable cliff. Their grotesque heads may often be seen protruding from their burrows near the tops of the cliffs and the few feathers and moss fragments constituting the nest may be found from three to six feet back under the turf covering the top stratum of rocks. This sort of location seems to be preferred, but some nest in deep holes on the sides of the cliffs. On the Pribilof Islands both species of Puffins nest together but on St. Matthew there is much less admixture. The eggs of this species are less chalky, more inclined to be spotted with purple, and are longer than those of the Tufted Puffin.

Phaleris psittacula. PAROQUET AUKLET.—In the aggregate large numbers of this species breed on the islands. They are not usually found in colonies but single pairs nest here and there on the boldest headlands. The single egg is found in a rock crevice and is very difficult to obtain.

Æthia cristatella. CRESTED AUKLET.—Except for a large colony found on the cliffs about two miles south of Cape Glory of Russia this species is rare. It breeds in limited numbers on Hall Island and a few were seen at almost every landing on St. Matthew. They are believed to be less common than on the Pribilof Islands where they form an insignificant portion of the wonderful ornithological display.

Æthia pusilla. LEAST AUKLET.—Four flocks only of this species were seen and these in every case were feeding in the sea just off shore. It is possible a few may breed but none were seen on shore, even on beaches which seemed very favorable for them.

Cephus columba. PIGEON GUILLEMOT.—Found casually on all cliffs where they breed high up and well protected from the foxes. While this species nests at Unalaska and at St. Matthew absolutely none stop at the Pribilofs during the summer. No plausible explanation for this peculiar distribution can be given.

Uria troille californica. CALIFORNIA MURRE.

Uria lomvia arra. PALLAS'S MURRE.—Both species of Murres are exceedingly abundant on all cliffs. On many projecting ledges they nest side by side. When sitting on their eggs they are usually very tame and this enables one to identify a particular bird before the egg is taken. Without such identification it becomes doubtful to which species an egg may belong as eggs apparently intergrade in all characters. The birds may be easily distinguished on the cliffs by color. The species first named is a dull dark bronze on the head and back, while the latter is jet black. Also the bill of the latter is shorter and thicker and it bears a long narrow white stripe below the gape in the breeding season. During the nesting

season the White Foxes live almost exclusively on Murre's eggs and they are very adept at scaling the cliffs for them. Sometimes they bury the eggs in the tundra back of the cliffs and eat them later in the year.

[**Stercorarius longicaudus.** LONG-TAILED JAEGER.—One shot on Hall Island on July 14, 1899, had a Meadow Mouse (*Microtus abbreviatus*), in its gullet, and the remains of another in the stomach. (A. K. F.)]

[**Rissa tridactyla pollicaris.** PACIFIC KITTIWAKE.—Colonies of a hundred to a thousand were found at various places on the cliffs. Substantial nests are constructed of grass and moss in places which are usually just out of reach. The smaller Red-legged Kittiwake was closely watched for but was not seen after leaving the Pribilofs.

[**Larus hyperboreus.** GLAUCOUS GULL.—This is the only member of this genus found nesting on the reservation. The Glaucous-winged Gull may occur occasionally even in mid-summer but it was not noted by me at any time after the Pribilofs were out of sight. The big white Burgomaster was constantly seen while we were about St. Matthew and Hall Islands, either scouring the beaches for carrion or hunting the cliffs for Murre's eggs. It builds its nests of matted grass and moss and keeps a very filthy house. Considerable sagacity is shown in placing the nest in an inaccessible place, usually offshore on outlying rocks which can be scaled neither by man nor fox. One of these however I was able to climb and found on top about 100 nests, one third of which were being occupied. The young, (black speckled balls of white down), were just appearing on July 10 and were just a little ahead of the cormorants. Around each nest were found quantities of the shells of Murre's eggs and the same were found in the stomachs of those birds examined.

St. Matthew Island marks the southern breeding limit of this species in the Bering Sea Islands, save for a small colony on Walrus Island of the Pribilofs, the Glaucous-winged Gull being the common breeding species of the Pribilof group. In fall and winter both species move southward and both are found on St. Paul throughout the fall. In the coldest parts of the winter the Glaucous Gull only is found there.

[**Xema sabini.** SABINE'S GULL.—Two specimens, now in the Biological Survey collection, were secured from a flock of five on July 15, 1899. They were fishing off-shore in company with *Rissa* and *Larus*. (A. K. F.)]

[**Sterna paradisæa.** ARCTIC TERN.—Observed about the islands on at least one occasion, July 14 or 15, 1899. (A. K. F.)]

[**Fulmarus rodgersi.** RODGER'S FULMAR.—This is one of the most abundant birds found breeding on St. Matthew. On every cliff there were very large colonies. Among all the many thousands of birds seen here not one of the dark phase was noted. The single white egg is placed on any kind of a ledge which is large enough for the bird to sit upon.

[**Phalacrocorax pelagicus robustus.** VIOLET-GREEN CORMORANT.—No other Cormorants except this species were found on the reservation although a careful lookout was kept for the Red-faced. Nests were found on almost every cliff and they were especially abundant about the south

end of Hall Island. Here they could be reached without a rope. Young had appeared in a few nests and were ready to hatch in most of the others, yet an egg was taken from a bird killed July 8. This egg was light blue in color, almost devoid of the usual chalky deposits found on most specimens.

The nests are rather capacious affairs constructed of grass and moss from the tablelands above the cliffs, and are very dirty. I believe the bird which sets on the eggs is fed to a certain extent by its mate because there were numerous balls of vomited flesh remains about many of the nests.

Dr. Leonhard Stejneger (Bull. 29, U. S. Nat. Mus., pp. 181-191, Pl. VIII, 1885) has given excellent figures and descriptions, based on external characters, for separating the immature birds of the Pelagic Cormorant from the Red-faced, but nevertheless individual birds are very hard to determine in the field.

Anas platyrhynchos. MALLARD.—A party from the ship reported that a pair of Mallards was seen on July 8, about the lakes on the spit connecting Cape Upright with the main portion of St. Matthew. The birds were well described and I do not hesitate to include the species among the casual breeders although it was not subsequently seen.

Mareca penelope. EUROPEAN WIDGEON.—This species is included in the list solely upon a single wing found in a cabin near Cape Glory of Russia. It had been nailed up for an ornament and possibly may have been brought from elsewhere. It certainly is not a breeding bird on the reservation.

Nettion carolinense. GREEN-WINGED TEAL.—As with the preceding species some wings nailed to the walls of the old trapper's cabin are the basis of the record. They were probably taken on St. Matthew during migration. I did not find any evidence of breeding. These wings may have come from *Nettion crecca* as that is the breeding Teal found in the Aleutian Islands.

Harelda hyemalis. OLD-SQUAW.—A very few breed in the fresh water lakes.

Histrionicus histrionicus pacificus. PACIFIC HARLEQUIN DUCK.—Only one small flock was seen. It was near the beach of Hall Island July 13. [Included under *H. histrionicus* in the A. O. U. Check-List.]

Somateria v-nigra. PACIFIC EIDER.—A female individual was secured on July 15, 1899. (A. K. F.)]

Somateria spectabilis. KING EIDER.—This bird was found to be abundant in all lakes which were near the sea. Many of the lakes had only gravel spits separating them from salt water and regular flights back and forth over these were made. Many of the birds were paired and were evidently nesting but eggs were not found. No other Eider appears to visit the reservation in the breeding season.

Olor columbianus. WHISTLING SWAN.—From two to four swans were found about the fresh water lakes at every landing place and while no specimens were obtained I do not doubt the species was the whistling. All were very wary and the country offered poor facilities for stalking. No positive evidence of breeding was found.

Grus canadensis. LITTLE BROWN CRANE.—One bird was seen back of a lake near the middle of the north shore of St. Matthew. At first it persistently stayed on top of the highest knolls but finally flew to a neighboring mountain.

Phalaropus fulicarius. RED PHALAROPE.—Two flocks in full summer dress were found feeding in the surf on the north shore of St. Matthew Island July 11. From June 8 to 14 while we were in the ice in the vicinity of St. Matthew thousands of these birds flew past the ship, headed north.

Lobipes lobatus. NORTHERN PHALAROPE.—This species breeds abundantly about all the fresh water lakes.

Arquatella maritima ptilocnemis. PRIBILOF SANDPIPER.—This is the most abundant bird of the level lands of the islands. Large numbers were in sight at every landing. Fresh eggs, and young birds running about in the grass and moss, were found. On the Pribilof Islands they nest on the highest parts of the islands and not commonly there, while on St. Matthew nearly all stay below 300 feet elevation. The males were beginning to resort to the margins of the lagoons in flocks by July 12.

Arenaria interpres oahuensis. PACIFIC TURNSTONE.—An adult male was found on Hall Island July 13. From its actions it appeared to have a mate and nest near by but they could not be found. It was not observed elsewhere on the reservation. [Included under *A. interpres* in the A. O. U. Check-List.]

Nyctea nyctea. SNOWY OWL.—No birds were seen but feathers were found lining the nests of McKay's Snow Buntings and several pellets containing rodent remains were found. These were so large that the identification of the species is practically certain.

[On Hall Island our party saw several adult Snowy Owls, one of which was killed. A nest found on July 14, 1899 contained four young the largest of which weighed twice as much as the smallest. Two Meadow Mice (*Microtus abbreviatus*), were found at the nest, and pellets contained the remains of Meadow Mice and birds. (A. K. F.)]

Corvus corax principalis. NORTHERN RAVEN.—About a dozen birds were observed on the mountainous Cape Upright end of St. Matthew and strangely individuals did not occur elsewhere. They were high up on the rocky sides of the mountains, apparently eating the crow berries of the year before. Here they would utter notes not unlike the yelp of the white foxes. Indeed the two were so much alike that I was mistaken in the source of the sound for some time. It seems strange that this species has never become established on the Pribilof Islands while it lives everywhere else around Bering Sea.

Leucosticte griseonucha. ALEUTIAN ROSY FINCH.—A few birds nest about most of the cliffs but they are much less common than on the Pribilof Islands.

Acanthis linaria linaria. REDPOLL.—A flock of four flew high overhead while we were on top of one of the bald domes in the center of the island of St. Matthew. They probably do not breed but flocks may fly over at any time as on the Pribilofs.

Plectrophenax hyperboreus. MCKAY'S SNOW BUNTING.—Next to the Pribilof Sandpiper this is the most abundant bird of the level lands. It was most common along the shingle beaches where it nested in old hollow drift logs. One nest was found in an old hollow spruce which had been excavated by some woodpecker on the mainland when the tree was standing. A few birds were found to the tops of the highest mountains. Flying young and fresh eggs were found, indicating that two broods are reared. No other Snow Bunting was obtained and it is not believed that any other resides on the reservation in summer.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.—The Longspur breeds abundantly on the lower parts of the islands. One nest was found loosely constructed of sedges and lined with a few feathers. It contained six eggs. On June 12 an adult male came aboard the ship while we were in the ice and stayed all day. It seemed very fond of cracked hominy.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW.—One was flushed on Hall Island on July 13 but was not secured. Another spent the day aboard the ship while we were in the ice south of St. Matthew June 10. If it breeds at all it is very rare.

Budytes flavus alascensis. ALASKA YELLOW WAGTAIL.—A pair, (apparently from a nest), was found on Hall Island July 13. They were much disturbed at my presence and flew back and forth over my head for half an hour before descending into gun range. It doubtless breeds but rarely.

NESTING OF THE CAPE MAY WARBLER AT LAKE EDWARD, QUEBEC.

H. F. MERRIAM.

LAKE EDWARD lies in the Laurentian hills one hundred miles north of the city of Quebec. Since the great forest fire some twelve years ago a growth of birch, alder and briars has sprung up and a comparatively small part of the country is still covered with the original spruce and balsam. In these restricted areas are to be found in abundance many of those Warblers which find their summer homes in coniferous woods. The islands in the lake are within this class, being wooded for the most part with spruce and balsam of moderate size interspersed with large white and yellow

birches. It was on one of these islands that the Cape May Warbler was found nesting.

The nesting site was discovered on June 7, 1916, when the female was seen carrying material to the thick top of a spruce about forty feet from the ground. This was in a rather open part of the woods perhaps fifty feet from the shore of the lake. Identification was for a time uncertain. But observations on six different occasions between June 7th and 18th of from one to two hours duration each time, were sufficient to remove all doubts. During this time the female was seen many times on the ground or in the low growth at a distance of ten feet or less, and the male with his characteristic markings was seen clearly in bushes or low trees at least five times within fifteen feet besides many times at greater distances and heights.

The female was not at all timid and apparently gathered most of her nesting material at two places, both within sixty feet of the nest tree. By taking a partly concealed post within a few feet of these places many excellent opportunities for observation were secured. Several times the female flew directly from the nest to the ground or brush passing within a few feet of the observer's head. While searching in the low growth she was absorbed in manner, giving only occasionally a sharp chip. In going to the nest her actions were more rapid and she chipped more frequently, generally alighting ten to twenty feet below the nest and working her way up from limb to limb on the outside of the tree. She was an industrious worker and during the period of nest building was found at work whenever this part of the woods was visited, both morning and afternoon.

The male was not seen to carry any nest material but seemed to be generally in the immediate neighborhood. At times he accompanied the female part way to or from the nest and sometimes remained near her in the low spruces. Once the female was attacked by a Junco and after a chase the Junco actually caught and held her. At this commotion the male Cape May flew down and lit close by but took no active part in the argument. The Junco was apparently victor for after one more flight to her nest the female Cape May was not again seen to trespass on the Junco's territory or do any more nest building that morning. The male

spent most of his time well up in the trees and seemed particularly fond of a large white birch. Among the small branches of this tree he was seen and heard many times. Once when a small hawk flew overhead a rapid chipper seemed to indicate the Cape May note of alarm or warning.

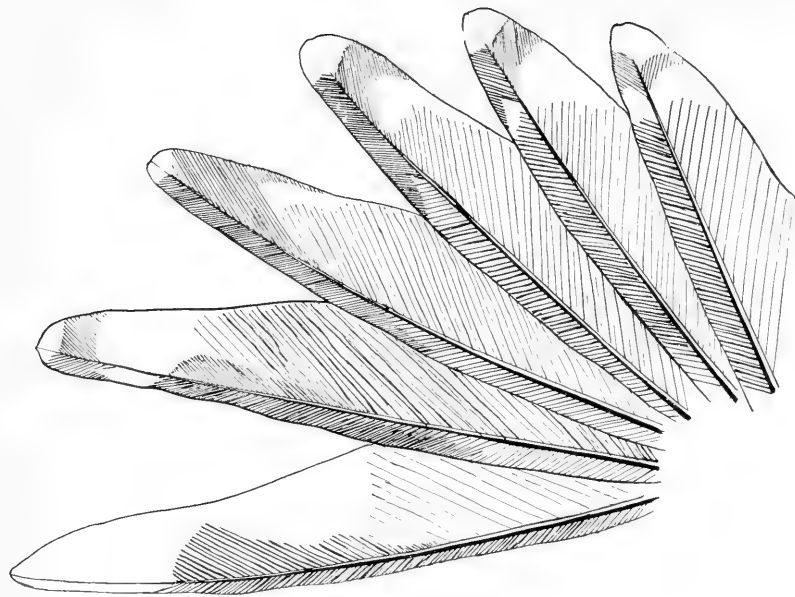
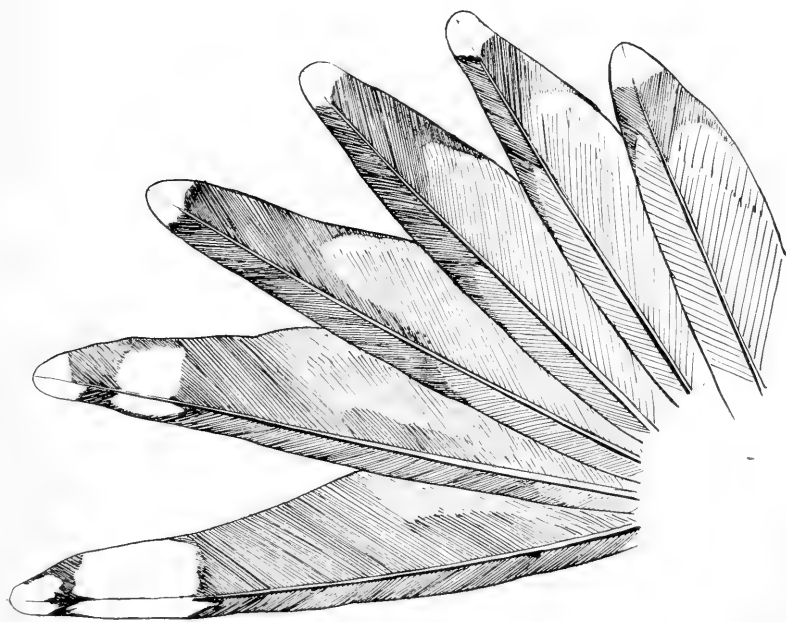
On June 11 the male was seen to chase the female. The next day nest building was apparently complete. An hour's watching on the 13 also failed to show any further nest construction, although the female was frequently heard in the low growth. Once she flew ten feet up in a spruce and gave a peculiar note at the same time lifting her tail. Immediately the male flew down and copulation took place. The whole proceeding resembled very much that of the Chipping Sparrow.

Neither male or female were seen again until June 18 at which date the set was judged to be complete. When the writer had climbed perhaps ten feet up in the nesting tree, the female flew off but soon returned to the nest. This was repeated once more before the nest was reached. The male was heard but not clearly seen.

The nest was placed about six feet from the top of the tree on a short branch nine inches from the trunk and an equal distance from the tip. From the ground it could not be seen even with field glasses. From a few feet below the nest was apparently a green ball of moss. Closer examination, however, showed it to be a neatly cupped nest resting on the branch and short twigs. To these it was not securely tied and was lifted intact from its position without difficulty.

The exterior of the nest was of green Sphagnum moss, interwoven with vine stems, and a very few twigs, bound lightly with plant down, small wads of which appeared here and there over the moss. The body of the nest consisted of fine grass stems. Within this was a lining of white hairs apparently from the rabbit, one small partridge feather and a few fine black rootlets. The nest was bulky but very neatly and fairly compactly put together. At the rim one side was very smoothly finished. This was probably the entrance side toward the tree trunk. It was an unusual and beautiful nest.

Dimensions: outside 4 " wide, $2\frac{1}{4}$ " deep.
inside $1\frac{3}{4}$ " " 1 " "



TIPS OF OUTER PRIMARIES.

1 *Larus argentatus argentatus*, adult Male. J. Dwight No. 10777.

2 *Larus argentatus thayeri*, adult Male. M. C. Z. No. 40336.

The eggs, six in number, were a clear white with many spots and blotches of light reddish brown distributed over the surface, confluent at the large end to form a wreath. They were also characterized by a few light lavender marks and a few almost black lines and spots.

Average dimensions .698" \times .50".

The author is aware that the observations here recorded do not appear to harmonize well with the accounts of J. W. Banks and others of the nesting habits of the Cape May Warbler. It seems probable that this pair of birds were not typical in their choice of a nesting site. It is also probable that nest construction varies considerably in different localities as is often the case with other warblers. Notwithstanding these variations it is hoped that the details here given may be of service in the further study of this very interesting warbler.



THE STATUS OF "*LARUS THAYERI*, THAYER'S GULL."

BY JONATHAN DWIGHT, M. D.

Plate XV.

ABOUT two years ago a new Arctic Gull was described as "*Larus thayeri*" on the strength of a few birds obtained in Ellesmere Land (see Brooks, Bull. M. C. Z. LIX, No. 5, Sept. 1915, pp. 373-375). Recently, thanks to the courtesy of Mr. P. A. Taverner, of the Victoria Memorial Museum of the Canadian Geological Survey, I have had opportunity of comparing his fine series of Arctic Gulls with the type and others of *thayeri* loaned me by Mr. O. Bangs of the Museum of Comparative Zoölogy. Other specimens in the American Museum of Natural History and in my own collection bring the series examined up to twenty-five and these compared with a much larger series of the Herring Gull (*Larus argentatus*) demonstrate that the supposed new species is nothing more than a

geographical race of the Herring Gull and should stand as *Larus argentatus thayeri* — Thayer's Herring Gull.

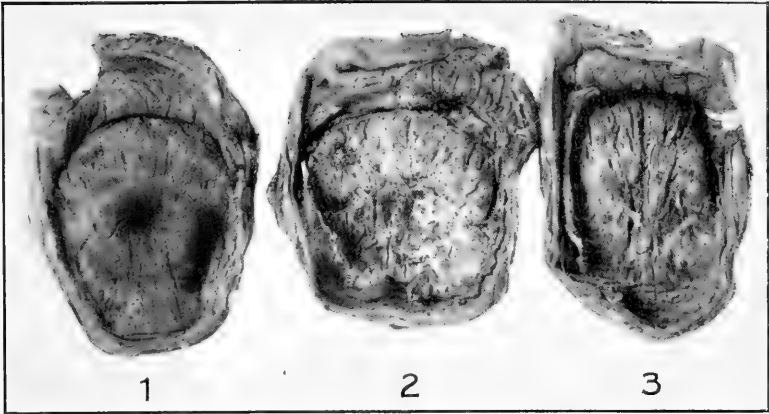
Complete intergradation between the two forms occurs, *argentatus* prevailing south of Hudson Strait and of the northern shores of Hudson Bay, while northward probably throughout the Arctic archipelago of Canada, *thayeri* seems to be the common form.

Breeding birds of Ft. Chimo, Ungava, are *argentatus*, and those of Cape Fullerton, north of Chesterfield Inlet not quite typical *thayeri* but farther north and west all the birds are *thayeri*. The localities from which I have seen breeding specimens are Buchanan Bay, Ellesmere Land, Browne Island (south of Cornwallis Island), Kater Point, Coronation Gulf, Bernard Harbor, Dolphin and Union Strait and Cape Kellett, Banks Island.

Thayer's Herring Gull probably winters chiefly on the Pacific Coast for I have examined a number of specimens from Barkley Sound, Departure Bay and Comox, Vancouver Island, British Columbia. I also have an adult female in my own collection taken on the north shore of the St. Lawrence at Tadousac, Quebec, July 26, but this specimen is doubtless a wanderer from the north for dissection showed it to be a bird past the breeding stage.

The plate (Plate XV) shows so well the chief character by which the two races may be distinguished that little need be said except that *thayeri* is a little smaller and is apt to have the primaries of a slatier black. Fig. 2 represents the wing pattern of the type of *thayeri* (M. C. Z. No. 40336, ♂ June 10, Ellesmere Land). Other specimens show a great diminution of white on the first and second primaries and a subterminal band of black on the first, while specimens of *argentatus* often have the first primary with a completely white tip.

The describer is further to be congratulated for discovering a gull with characters that create a strong suspicion as to the affinities of *Larus kumlieni*. If *thayeri* were crossed with *Larus leucopterus* we would expect just such a series of hybrid specimens as now are placed under the name *kumlieni*, but this is a matter for future consideration.



STOMACH LINING OF DUCKS.
1-4 MALLARD, 5 AND 7 BLACK DUCK,
6 REDHEAD.

THE SHEDDING OF THE STOMACH LINING BY BIRDS,
PARTICULARLY AS EXEMPLIFIED BY
THE ANATIDÆ.

BY W. L. MCATEE.

Plates XVI-XVII.

AT the beginning of this discussion, it is well to make sure that all understand the true nature of the stomach lining of birds. Besides the innermost lining with which we are now especially concerned, the stomach wall in birds consists of three layers: the external serous or connective tissue coat, the middle muscular layer, which varies greatly in development, in the different groups and the inner glandular or mucous coat. In section, as viewed through the microscope, the mucous coat is seen to consist chiefly of innumerable long slender villi. It is among these that the material is secreted that forms the innermost or fourth coat of the stomach. This lining is of a horny but somewhat flexible consistency. It strips rather easily from the mucous coat, and when freshly pulled off its inner surface has a furry appearance. When examined under the microscope the filaments giving it this appearance are seen to continue into the mucous coat. This interdigitation must aid greatly in holding the corneous lining in place, during the digestive process, which is a strenuous one, particularly in birds with highly developed grinding gizzards, as the Anatidæ.

To emphasize the intensity of the grinding process in which the stomach lining takes part, it may be well to give an idea of the power exerted by the gizzards of birds. De Reaumur found that small tin cylinders fed to turkeys were crushed by the gizzard in a short time; and pellets of shot in gizzards often are greatly flattened. Wild ducks habitually feed on such things as acorns and hickory nuts and have no difficulty in grinding them up. In fact, according to the writer's experience, bitter pecans which have a thick hard shell are cracked as they enter the gizzard, and before they can possibly have been exposed to the maximum pressure. Many species of ducks feed upon thick-shelled mollusks,

which they must of course swallow whole and grind up in their gizzards. Such species as the Scoters and Greater Scaup thus easily dispose of oysters.

It is evident that a mass of fragments of such shellfish, or even some softer food, interspersed with often sharply angular gravel, and subjected to grinding by the tremendous muscular power indicated, must have a powerful abrading effect upon the lining of the gizzard. Nothing is more natural to suppose, therefore, than that the lining wears out and must be replaced.

The stomach lining when fresh covers the whole interior of the organ, being thin about the openings into the stomach and on those parts of the wall between the great muscle masses. On the inner face of each main muscle-body, however, the lining is greatly thickened. This part of the lining is hereafter referred to by the term, pad. Each pad has a somewhat crescent-shaped, very firm grinding ridge which is opposed to the ridgeless end of its fellow pad.

The movements of the gizzard during trituration are such as to give the food mass a rotary motion. This we know from the arrangement of the longer particles in food taken from bird stomachs and from the appearance of the caterpillar hairs which remain sticking in the lining of cuckoo stomachs. The arrangement of these resembles that of the fibers on the top of a well-brushed silk hat.

The rotary movement of the gizzard contents, together with the presentation of the hard thick grinding ridge of one pad against the thinner, less durable portion of the pad on the other side, results in wear first becoming apparent on these thinner ends of the pads (Fig. 1). A little such wear reveals the fact that the pads have a stratified structure and the gradual approach of the ends of the strata toward the middle of the pad indicates the progress of the wear (Figs. 2 and 10). It may be that such wear is compensated for, at least in part, by addition to the pads from below, but eventually they become unserviceable and must be shed.

Often the wear takes the form of a rolling up of the ends of the pads, which are thus subjected to much greater stress (Figs. 8 and 9). Furthermore, in such case, food and grinding material getting under the pad tend to force it away from the mucous coat.

Wear is manifested also by the lining becoming longitudinally grooved, and by strips or broader fragments being gouged out (Figs. 3 to 7). In some cases the broken surface of the pad together with the shredded portions remaining in position, have a distinctly pathologic appearance, and make it hard to realize that one observes but a stage in a normal and periodically recurring process.

Apparently after the lining has reached a certain degree of wear, general shedding occurs. Then, all the thinner portions of the lining usually come off as well as the thick central pads. Rarely a bit of the old lining may cling, and if a piece of one of the pads, it stands out prominently from the new smooth surface. Such pieces gradually wear away from the new lining which bears them. Finding fragments of stomach lining among the food is by far the most common evidence of the shedding. No fewer than 5 large and 20 small pieces of lining have been found in a single stomach. It is certain that the normal process in the Anatidæ is, that the worn stomach lining is shed off, ground up, and passed out of the body through the intestines. Cases of the regurgitation of the lining are what are chiefly recorded in the literature, but in Anatidæ, regurgitation seems practically impossible.

When the central pads and other parts of the stomach lining are freshly shed off, the surface below is not always a new grinding surface, but may be the soft mucous coat itself. This is known by the fact that objects in the gizzard become imbedded in it, something that never happens (except in case of sharp bones, etc.) when the horny lining is concerned. Stomachs in this stage are empty or nearly so, and it is probable that there is a pause in digestive action until a new lining is formed. A useful incidental result of shedding the lining is that the bird gets rid of the parasitic worms (Nematodes) that frequently lie half beneath, half above the lining.

As to the frequency with which evidences of wear are observed, I may say that in a collection of 30 stomachs of ducks from Minot, Mass., 4, or 13% showed marked wear; the proportion in another lot of 67 from Wenham, Mass., was 24%. I have noted severe wear or some stage of the actual shedding process in about 100 gizzards of the common Mallard, 66 of the Lesser Scaup, 28 of the

Black Duck, etc. The number of species of ducks and geese in which the process has been observed is 24 and includes the following:

Merganser, Mallard, Black Duck, Florida Duck, Gadwall, Baldpate, Green-winged Teal, Blue-winged Teal, Shoveller, Pintail, Wood Duck, Redhead, Canvasback, Greater and Lesser Scaups, Ring-necked Duck, Goldeneye, Bufflehead, White-winged Scoter, Surf Scoter, Ruddy Duck, Blue Goose, Ross's Goose and Canada Goose.

In connection with the last named species it is interesting to note that Audubon described (though unwittingly) a case of the shedding of the stomach lining. He says:¹ "The epithelium forms two transversely elliptical, concave grinding surfaces, of great density (but it is altogether wanting on the rest of the inner surface, although this may have happened after death)." It is not surprising that the last thought occurred to him, as an explanation of the case, for things certainly do not look right inside a shedding gizzard. However, there is little doubt that that was just what he examined. A comparable case is shown in Fig. 11.

Birds other than Anatidæ for which we have found evidence of shedding the stomach lining are discussed by species, which number 11:

Royal Tern (*Sterna maxima*), Amelia Id., Fla., Nov. 26, 1906.—

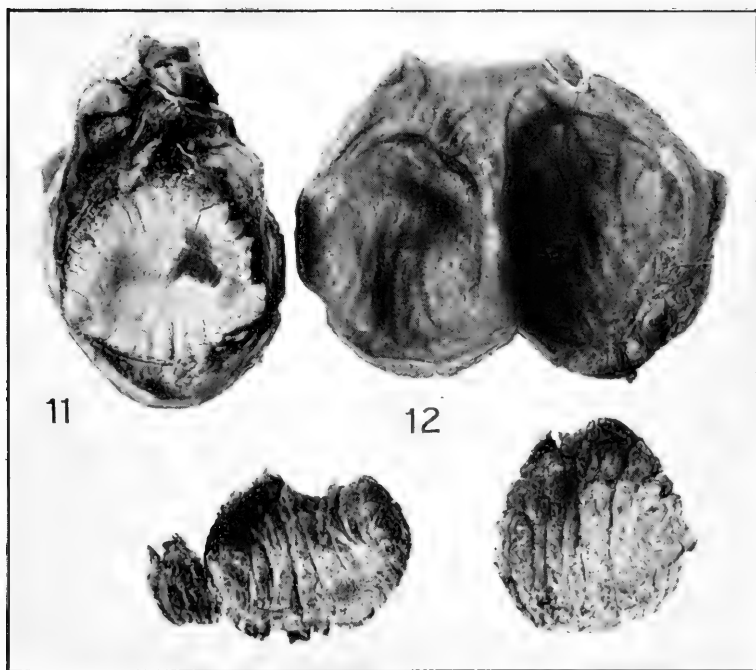
A large crescentic fold of the lining has been pushed away from the mucosa near œsophageal orifice, evidently by incoming food. If the bird had lived, there is little doubt that the entire lining would soon have sloughed off.

Black-necked Stilt (*Himantopus mexicanus*), St. Joseph Id., Tex., Aug. 14, 1905.—Stomach contained a shed lining in fragments, and the functional lining was cracked and separating readily, leaving a hard layer beneath.

Long-billed Dowitcher (*Macrorhamphus griseus scolopaceus*), Aransas Bay, Texas, August 14, 1905.—Lining entirely free from stomach wall, complete but broken into two pieces; next layer hard.

Bobwhite (*Colinus virginianus* subsp.), Gurley, Texas, July 19, 1905.—Entire lining very loose, with particles of food behind it on one side; next lining hard. Apparently this lining would have soon separated as a whole.

¹ Orn. Biogr. 5, 1849, p. 609.



STOMACH LINING OF DUCKS AND GESE.
8-9 MALLARD, 10 AND 12 GREATER SCAUP,
11 ROSS'S GOOSE.

Sparrow Hawk (*Falco sparverius sparverius*), Navasota, Texas, October 11, 1905.

Yellow-billed Cuckoo (*Coccyzus americanus americanus*).—Have seen seven instances of shedding of lining in this species; six of them were in a lot of eleven stomachs.

Black-billed Cuckoo (*Coccyzus erythrophthalmus*).—In a lot of 6 stomachs heavily lined with caterpillar hairs, the lining of 5 was cracked and peeling off. It has been noticed that among cuckoos taken at the same place and time, some have the stomach lining furred with caterpillar hairs, while others lack them. The explanation of this may be frequent shedding of stomach linings.

Magpie (*Pica pica hudsonia*), Farmington, Utah, May 7, 1912.—Numerous pieces of old lining free in stomach, the largest tightly rolled up by muscular action of gizzard; new lining perfect.

Fish Crow (*Corvus ossifragus*) Norfolk, Va., December 20, 1890.

Southern Meadowlark (*Sturnella magna argutula*) Turtle Bayou, Texas, September 22, 1897.—Complete old lining somewhat worn and cracked, almost wholly separated from new lining, but still in position.

California Thrasher (*Toxostoma redivivum*) Watsonville, Calif., August 31, 1903.—This stomach shows a peculiar malformation—an inwardly projecting lobe. The lining had been molded over this of course, and the fact that the lining was shedding is shown by this hollow flap having sloughed off and its inner surfaces cohering.

Mockingbird (*Mimus polyglottos polyglottos*).—Five cases of shedding or incipient shedding noted.

Hermit Thrush (*Hylocichla guttata* subsp.) Allen's Park, Colo., September 28, 1905.

These species are scattered through the groups of birds in a way to suggest, that cases of the shedding of the stomach lining may eventually be observed in almost any species.

CONCLUSIONS.

A number of instances have been recorded in ornithological literature (see bibliography) of stomach linings being shed and regurgitated. This, of course, is the only form of the phenomenon

observable in living birds, and appears, except in the case of the hornbills, to be of *unusual* occurrence. Observations made during the course of stomach examinations, however, make it certain that the gradual wearing down, shedding off, and grinding up of the lining is much more frequent. Among the birds which have strongly muscular gizzards, shedding of the stomach lining, probably occurs more or less regularly and is necessary to maintain the efficiency of the food-triturating process.

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Details of the structure.

NEWTON, ALFRED and GADOW, HANS.

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Notes on this subject, under Hornbill, p. 437, and under Stomach,

p. 918. On the latter page, casting the stomach lining from the mouth is recorded for *Pastor roseus*, *Sturnus vulgaris*, *Turdus viscivorus*, *Carine noctua*, *Cuculus canorus* and *Buceros*.

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Note on the ejection of the lining membrane of the gizzard by the curlew. *British Birds*, VI, No. 11, April 1, 1913, pp. 334-336.

The note refers to *Numenius arquata*; the observer, Mr. Dugald Macintyre states that curlews periodically eject the lining membrane, still retaining the grit used in digestion.

EXPLANATION OF PLATES.

PLATE XVI.

FIG. 1. Lining showing slight wear, at ends of pads (Mallard).

FIG. 2. Pad much worn at ends, inner strata much shortened (Mallard).

FIG. 3. Pad longitudinally grooved, with shreds peeling off (Mallard).

FIG. 4. Large fragment broken out of pad (Mallard).

FIG. 5. Same (Black Duck).

FIG. 6. Pad split lengthwise, shredded and separating from mucosa (Redhead).

FIG. 7. Fragment of pad in course of breaking out; it is doubled and stands up from general surface at upper right center (Black Duck).

PLATE XVII.

FIG. 8. Pad curling up at lower end (Mallard).

FIG. 9. A more advanced stage of same process, whole pad nearly separated (Mallard).

FIG. 10. Extreme wear, lower third and upper fourth of pad worn off, remainder sloughing off (Greater Scaup).

FIG. 11. Lining all gone except heavy central pad, this ready to shed (Ross's Goose).

FIG. 12. Lining completely shed, mucosa bare, the two pads much worn but almost entire were loose in the stomach (Greater Scaup).

NOTES ON THE KENNICOTT'S SCREECH OWL (*OTUS ASIO KENNICOTTI*) IN THE PUGET SOUND REGION.

BY J. HOOPER BOWLES.

THE following notes, unless otherwise specified, are taken entirely from the vicinity of Tacoma, Washington, which is situated on Puget Sound at the head of Commencement Bay. This region, together with the vicinity of the fresh water lakes, rivers and marshes of the surrounding country, furnish many attractions for this subspecies, which at the best is by no means common in any part of its range. There seems no apparent reason why it should not be as abundant as the owls of this genus that are found in New England or California, with both of which I am very familiar, but such is far from being the case. The most favored localities are in the immediate vicinity of water, either fresh or salt, where the country is to some extent open. Deciduous timber seems to be given a slight preference over the fir woods, as a rule, though during the day the birds are usually found hiding amongst the dark foliage of some young fir.

It is a resident throughout the year, and is probably no more abundant at one season than another, although it is much more often heard calling during the fall than at any other time.

The size of the birds in this vicinity is a matter of considerable interest to me when I compare them with the measurements of this form as given in the books. These would seem to indicate that a length of ten inches or more might be expected, but my experience has been that such is never the case. Specimens that I have had in my collection measured, before skinning, from 8.80 inches to 9.25 inches in length, the average being about 9.04 inches, and I believe that I can confidently assert that I have never seen one ten inches long. I do not for a moment wish to suggest the probability of a new race, although one cannot help recalling the formerly described Puget Sound Screech Owl in this connection, but it would seem of interest to indicate the size of the birds from this section of Puget Sound. Unlike a majority of the other *Raptores* the females are frequently smaller in size than the males,

neither sex appearing to have any regular advantage in this respect. As this article is intended to describe the habits of the birds, rather than to enter into technicalities regarding size and plumage, I will state briefly that we do not have two distinct color phases such as are found in the bird of the eastern states. Broadly speaking, our bird is brownish on the upper parts, heavily streaked with darker brown on the lower parts. Some specimens are slightly more grayish than others, especially on the lower parts, but there is surprisingly little variation to be found among them.

My experience has been that the nests are very rarely found, as in twenty years collecting I have seen only five sets of their eggs from this section. Three nests containing young have also been examined, although I have spared no pains in trying to locate their home sites. The eggs are almost invariably deposited in natural hollows in trees, the only exceptions being extra big holes made by the Northwestern Flicker (*Colaptes cafer saturation*). One of these two cases was a hole that had been excavated to a depth of only about six inches, in a lone dead fir stub that stood in a vacant lot in the city. A most unusual nesting site in every way for these owls, as the cavities used are most often two or three feet in depth and situated in well wooded localities. The nests that I have seen were placed from four to twelve feet above the ground, but it is impossible to say what the average height may be in this country where trees two hundred feet tall are the rule rather than the exception. No lining is used in the nests, unless this term might be applied to a goodly supply of feathers belonging to the Steller's Jay, Northwestern Flicker, etc., which gradually accumulate as incubation advances.

The nesting season commences in April and it is probable that the 15th might be set as an average date for fresh eggs. However, as is the custom with nearly all of our northwestern birds, the date for first layings is subject to great variation. One pair, from which I took a set of three eggs each season for two years, laid their eggs during the first week of May, but I believe this to be an unusually late date for this bird. I think that complete sets will usually be found to contain three eggs, although two are nearly as often the full number. In only one instance have I seen as many as four. In color they are pure white and some-

what glossy, with more or less nest stain according to the state of incubation. They are usually nearly spherical in shape, like the eggs of most owls, but occasionally there is a slightly elliptical tendency. The size is, perhaps, greater than any of the eggs of the other Screech Owls, and they are a source of never failing surprise to me when I compare them with the sitting bird which looks puny beside them. The average measurements of eggs from this locality is 1.59×1.31 inches, the extremes being 1.48×1.27 inches in the above mentioned set of two eggs, and 1.65×1.35 inches in the set of four. It will doubtless be a matter of interest to give the measurements of a complete set of two eggs taken at Victoria, B. C., by Mr. Walter F. Burton of that city. These measured 1.42×1.26 and 1.42×1.24 inches, but I am unable to say how nearly typical they may be for eggs from that locality.

In regard to their powers of sight it is my opinion that their sight is not very greatly impaired by daylight unless there is unusually bright sunshine. If the eggs are incubated to some extent the sitting bird may be taken from the nest and handled at will, but it is doubtful if the light has much if any dazing effect as has been suggested. They appear just as inactive if they are not taken out of the hole, permitting the eggs to be removed from beneath them without remonstrance and with very little movement. The only set of fresh eggs that I have ever seen were in a nest found by Mr. E. A. Kitchin, of Tacoma, and in this instance the actions of the sitting bird were entirely different. Upon putting my arm into the cavity it was greeted by a rapid snapping of the beak and fluttering of wings. As we had no idea what might be in the hole my arm was very promptly withdrawn, being at once followed by the owl itself. She sat in the entrance for a moment looking at us in an extremely hostile fashion and then darted swiftly out of sight through the trees, seeming to see perfectly well where she was going. Another time I was attempting to "squeak" up some small birds in a thicket when one of these owls flew up and perched on a limb within three feet of my head. I remained perfectly motionless and the bird stared hard at me for a while and then looked rapidly around in all directions. The body was bent forward and the ear tufts laid back, making as menacing and

wicked looking a little face as one might wish to see, and there is very little doubt that any wandering mouse would have been seen and snapped up at the first movement. In this connection it is curious that in many instances neither birds of prey nor wild animals seem to recognize a human being when they are drawn up by this "squeaking" process. I have had a red fox come up to within ten feet of me when I was sitting in plain sight without making out my identity in the least. It looked me over carefully seeming to examine me inch by inch, and then watched the ground with ears pricked forward and every sense apparently on the alert. The probability is, I believe, that they are expecting some small object like a mouse, consequently so large a body as a human being passes unnoticed. This is only natural, for we humans are liable to much the same error. It is doubtful, for instance, if there are many oölogists who, in a careful search among the trees for some warbler or creeper nest, have not once or twice passed over the nest of some hawk or crow that was in perfectly plain sight. It has happened to me more than once, the large nests being found afterwards. In both animal, bird, and man the eyes are focussed for the smaller object, the larger one being seen but not comprehended because unlooked for.

The variety of food eaten by these owls has formed a most interesting study, the results of which it seems justifiable to give in considerable detail. A great majority of the stomachs that I have examined were from birds taken during the fall and winter months, the contents being for the most part the remains of mice of different kinds. One interesting exception is that of a male given me by Mr. Stanton Warburton, Jr., of Tacoma. This bird was taken on January 6, 1917, at which time the thermometer was somewhat above freezing with no snow on the ground. The stomach contained eleven cut-worms, two centipedes, one mole cricket, one good sized beetle, and other insect remains. With all this on the credit side of their ledger, these owls are at times subject to some most astounding falls from grace. The fact does not reflect very greatly to their credit that nests containing incubated eggs or young are usually well sprinkled with the feathers of smaller birds. However, this might be more or less natural if rodents and other small animals were scarce, but the following

incidents seem beyond all comprehension. One friend told me that he heard an outcry among the ducks in his yard one night and, upon going out with a lantern, "found a Screech Owl riding around on the back of one of the big ducks, hanging onto its neck." This may seem no more than odd, but another friend, Dr. G. D. Shaver, of Tacoma, had his faith in these little owls completely shattered. A pair came and nested on his place within a short distance of his pens of gamebirds and fancy bantams, and, as the entrance of the nest was only four feet from the ground, the doctor took great pleasure in watching the sitting bird and her family as they grew up. One morning during the winter of 1914-1915, which was a very mild season, he was nearly overcome upon visiting his yards to find two dead Golden Pheasants, four dead Ring-necked Pheasants, and one Ring-neck cock so badly hurt that it died a few days later. All were, of course, grown birds at that time of the year. The injuries were nearly all gashes and rips in the head and neck, so the blame was laid to rats although none were ever seen or caught there. However, the pens were completely enclosed in two inch mesh hen-wire netting and nothing of the kind happened again that winter, the owls nesting in their regular homestead the following spring. The winter of 1915-1916 was the most severe that Tacoma has experienced in twenty years, and one morning the doctor found a screech owl in his quail pen, in the snow, and close by the neatly plucked body of a Varied Thrush. This aroused his suspicions so he killed the owl, not wishing to take any chances of losing his quail. Incidentally it was interesting to find that a bird as large as the owl could enter through a two inch wire mesh. On the morning of February 4, 1916, the doctor visited his yards and found a scene of murder similar to that of the previous year. In one pen were four of his prize Buff Cochins Bantams mangled and dead, some being in their house and others out in their yard, while in another pen were two fine cock Golden Pheasants in a similar condition. The wounds were similar in location and character to those made on the birds killed about a year before, but this time part of the head of one of the bantams had been eaten. There was no indication whatever of what had caused the damage, nor of how any predatory creature could have entered, so the doctor put a liberal dose of strychnine

into the body of the partly eaten bantam and replaced it in the same spot where he found it. Next morning the seemingly impossible was made a practical certainty, for he found the body of a screech owl with the claws of one foot firmly imbedded in the body of the bantam. He very kindly presented me with the owl which, upon dissection, proved to be a female, its stomach containing a very considerable amount of bantam flesh and feathers, together with a great deal of wheat. (It seems probable that the wheat was accidentally swallowed with the crop of the bantam during the feast, but there was so much that it seems strange the owl did not discard it while eating). How a bird only 9.12 inches in length could have dealt out such havoc in so short a time is almost incredible, but, although purely circumstantial, the evidence against the owl appeared altogether too strong for even a reasonable doubt. The doctor and I wished to make as certain as possible, however, so the poisoned bantam was replaced and left for several days, but without any further results. For the above mentioned reasons I am rather doubtful as to the net value of this owl from an economic standpoint, although birds in a wild state would not give them such opportunities for such wanton killing as birds enclosed in pens.

THE NICHE-RELATIONSHIPS OF THE CALIFORNIA THRASHER.¹

BY JOSEPH GRINNELL.

THE California Thrasher (*Toxostoma redivivum*) is one of the several distinct bird types which characterize the so-called "Californian Fauna." Its range is notably restricted, even more so than that of the Wren-Tit. Only at the south does the California Thrasher occur beyond the limits of the state of California, and in that direction only as far as the San Pedro Martir Mountains and

¹ Contribution from the Museum of Vertebrate Zoölogy of the University of California.

San Quintin, not more than one hundred and sixty miles below the Mexican line in Lower California.

An explanation of this restricted distribution is probably to be found in the close adjustment of the bird in various physiological and psychological respects to a narrow range of environmental conditions. The nature of these critical conditions is to be learned through an examination of the bird's habitat. It is desirable to make such examination at as many points in the general range of the species as possible with the object of determining the elements common to all these points, and of these the ones not in evidence beyond the limits of the bird's range. The following statements in this regard are summarized from the writer's personal experience combined with all the pertinent information afforded in literature.

The distribution of the California Thrasher as regards life-zone is unmistakable. Both as observed locally and over its entire range the species shows close adherence to the Upper Sonoran division of the Austral zone. Especially upwards, is it always sharply defined. For example, in approaching the sea-coast north of San Francisco Bay, in Sonoma County, where the vegetation is pre-vailingly Transition, thrashers are found only in the Sonoran "islands," namely southerly-facing hill slopes, where the maximum insolation manifests its effects in a distinctive chaparral containing such lower zone plants as *Adenostoma*. Again, around Monterey, to find thrashers one must seek the warm hill-slopes back from the coastal belt of conifers. Everywhere I have been, the thrashers seem to be very particular not to venture even a few rods into Transition, whether the latter consist of conifers or of high-zone species of manzanita and deer brush, though the latter growth resembles closely in density and general appearance the Upper Sonoran chaparral adjacent.

While sharply delimited, as an invariable rule, at the upper edge of Upper Sonoran, the California Thrasher is not so closely restricted at the *lower* edge of this zone. Locally, individuals occur, and numbers may do so where associational factors favor, down well into Lower Sonoran. Instances of this are particularly numerous in the San Diegan district; for example, in the Lower Sonoran "washes" at the mouths of the canyons along the south base of the San Gabriel Mountains, as near San Fernando, Pasadena, and

Azusa. A noticeable thing in this connection, however, is that, on the desert slopes of the mountains, where *Toxostoma lecontei* occurs on the desert floor as an associational homologue of *T. redivivum* in the Lower Sonoran zone, the latter "stays put" far

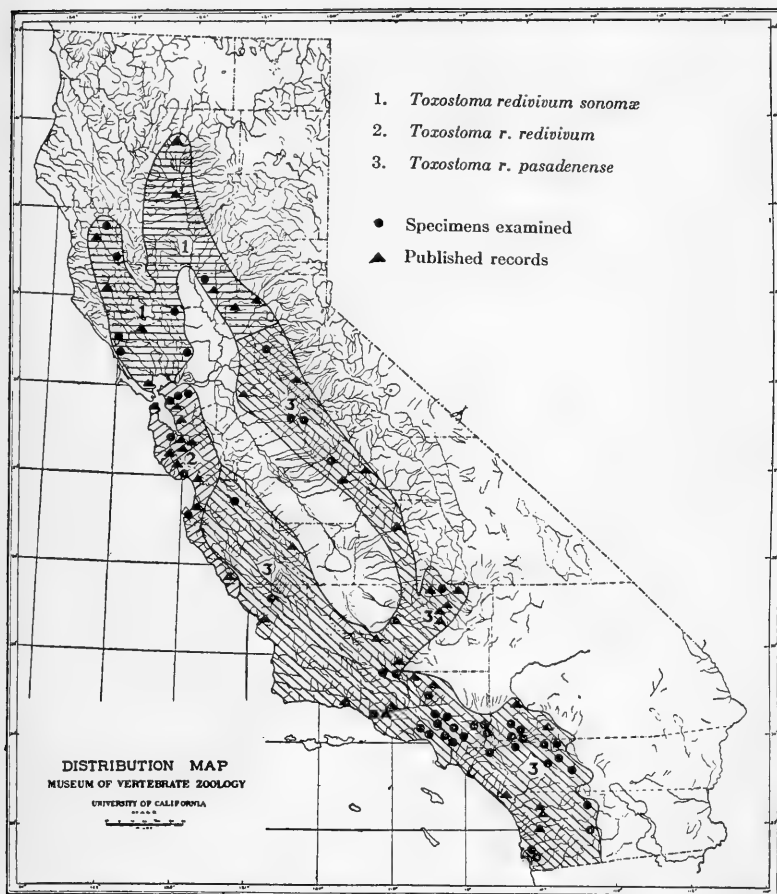


Figure 1.

more closely; that is, it strays but little or not at all below the typical confines of its own zone, namely *Upper Sonoran*. The writer's field work in the vicinity of Walker Pass, Kern County,

provides good illustrations of this. A tongue or belt of Lower Sonoran extends from the Mohave Desert over the low axial mountain ridge at the head of Kelso Creek and thence down along the valley of the South Fork of the Kern River nearly to Isabella. Leconte's Thrasher is a conspicuous element in this Lower Sonoran invasion, but no California Thrashers were met with in this region below the belt of good Upper Sonoran on the flanking mountain sides, as marked by the presence of digger pine, blue oak, sumach, silk-tassel bush, and other good zone-plants. Similar zonal relationships are on record from San Geronimo Pass, Riverside County, as well as elsewhere.

Reference now to the general range of the bird under consideration (see p. 429), as compared with a life-zone map of California (Pacific Coast Avifauna No. 11, Pls. I, II), will show to a remarkable degree how closely the former coincides with the Upper Sonoran zone. The thrasher is, to be sure, one of the elements upon the presence of which this zone was marked on the map; but it was only one of many, both plant and animal; and it is concordance with the aggregate that is significant. Diagnosis of zonation similarly is possible in scores of places where change in altitude (which as a rule means change in temperature) is the obvious factor, as up the west flank of the Sierra Nevada, or the north wall of the South Fork valley, already referred to, in Kern County, or on the north wall of the San Jacinto Mountains. The California Thrasher is unquestionably delimited in its range in ultimate analysis by temperature conditions. The isothermic area it occupies is in zonal parlance, Upper Sonoran.

The second order of restriction is faunal, using this term in its narrowed sense, indicating dependence upon atmospheric humidity. The California Thrasher does not range interiorly into excessively arid country, although the Upper Sonoran zone may, as around the southern end of the Sierra Nevada, continue uninterruptedly towards the interior in a generally latitudinal direction. This is true where extensive areas are considered, but locally, as with zones, individuals or descent-lines may have invaded short distances beyond the normally preferred conditions. An example of this situation is to be found on the north and west slopes of the San Jacinto Mountains, where California Thrashers range around

onto arid chaparral slopes, intermingling with such arid Upper Sonoran birds as Scott's Oriole and the Gray Vireo. It is questionable, however, as to what extent faunal restriction really operates in this case; for reference to the zone map, again, shows that a vast tract of Lower Sonoran, lying to the east of the desert divides, extends continuously north to the head of Owens Valley. Really the only unbroken bridge of Upper Sonoran towards the east from the west-Sierran habitat of *Toxostoma redivivum* is around the southern end of the Sierra Nevada — a very narrow and long route of possible emigration, with consequent factors unfavorable to invasion, irrespective of either temperature or humidity, such as interrupted associational requirements and small aggregate area. In this particular bird, therefore, faunal restriction may be of minor importance, as compared with zonal and associational controls.

That faunal conditions have had their influence on the species, however, is shown by the fact of geographic variation within its range. The thrasher throughout its habitat-as-a-whole, is subjected to different degrees of humidity. Amount of rainfall is, in a general way, an index of atmospheric humidity, though not without conspicuous exceptions. Comparing the map of the ranges of the subspecies of *T. redivivum* (p. 429) with a climatic map of the State, direct concordance is observed between areas of stated rainfall on the latter and the ranges of the respective subspecies. It will be seen that the race *T. r. pasadenense* occupies an area of relatively low humidity, the race *T. r. sonomæ* of higher humidity and the race *T. r. redivivum* of highest humidity, in fact a portion of California's fog-belt. The distinctive color-tones developed are, respectively, of gray, slate and brown casts. In the thrasher, therefore, we may look to faunal influences as having most to do with differentiation within the species. In this case it is the faunal variation over the occupied country which is apparently responsible for the intra-specific budding, or, in other words, the origination of new specific divarications.

Wherever it occurs, and in whichever of the three subspecies it is represented, the California Thrasher evinces strong associational predilections. It is a characteristic element in California's famous chaparral belt. Where this belt is broadest and best developed, as in the San Diegan district and in the foothill regions bordering

the great interior valleys, there the Thrasher abounds. The writer's personal field acquaintance with this bird gives basis for the following analysis of habitat relations.

The California Thrasher is a habitual forager beneath dense and continuous cover. Furthermore, probably two-thirds of its foraging is done on the ground. In seeking food above ground, as when patronizing cascara bushes, the thrasher rarely mounts to an exposed position, but only goes as high as is essential to securing the coveted fruits. The bird may be characterized as semi-terrestrial, but always dependent upon vegetational cover; and this cover must be of the chaparral type, open next to the ground, with strongly interlacing branch-work and evergreen leafy canopy close above — not forest under-growth, or close-set, upright stems as in new-growth willow, or matted leafage as in rank-growing annual herbage.

The Thrasher is relatively omnivorous in its diet. Beal (Biological Survey Bulletin no. 30, p. 55) examined 82 stomachs of *Toxostoma redivivum* and found that 59 percent of the food was of a vegetable nature and 41 animal. A large part of this food consisted of ground-beetles, ants, and seeds, such as are undoubtedly obtained by working over the litter beneath chaparral. The bird's most conspicuous structural feature, the long curved bill, is used to whisk aside the litter, and also to dig, pick-fashion, into soft earth where insects lie concealed. Ground much frequented by Thrashers shows numerous little pits in the soil surface, less than an inch deep, steep on one side and with a little heap of earth piled up on the opposite side. As already intimated, the Thrasher at times ascends to the foliage above, for fruit and doubtless some insects. Much in the way of berries and seeds may also be recovered from the ground in what is evidently the Thrasher's own specialized method of food-getting. Even granting this specialization, I do not see why the chaparral, alone, should afford the exclusive forage-ground; for the same mode of food-getting ought to be just as useful on the forest floor, or even on the meadow. The further fact, of widely omnivorous diet, leads one to conclude that it is *not* any peculiarity of food-source, or way of getting at it, that alone limits the Thrasher associationally. We must look farther.

The amateur observer, or collector of specimens, is struck by the

apparent "shyness" of the Thrasher — by the ease with which it eludes close observation, or, if thoroughly alarmed, escapes detection altogether. For this protective effect the bird is dependent upon appropriate cover, the chaparral, and upon its ability to co-operate in making use of this cover. The Thrasher has strong feet and legs, and muscular thighs, an equipment which betokens powers of running; the tail is conspicuously long, as in many running birds; and correlatively the wings are short, rounded, and soft-feathered, indicating little use of the flight function. The colors of the bird are non-conspicuous — blended, dark and light browns. The nests of the Thrasher are located in dense masses of foliage, from two to six feet above the ground, in bushes which are usually a part of its typical chaparral habitat. In only exceptional cases is the chosen nesting site located in a bush or scrubby tree, isolated more or less from the main body of the chaparral.

These various circumstances, which emphasize dependence upon cover, and adaptation in physical structure and temperament thereto, go to demonstrate the nature of the ultimate associational niche occupied by the California Thrasher. This is one of the minor niches which with their occupants all together make up the chaparral association. It is, of course, axiomatic that no two species regularly established in a single fauna have precisely the same niche relationships.

As a final statement with regard to the California Thrasher, we may conclude, then, that its range is determined by a narrow phase of conditions obtaining in the Chaparral association, within the California fauna, and within the Upper Sonoran life-zone.

NOTES ON LONG ISLAND BIRDS.

BY JOHN T. NICHOLS, ROBERT C. MURPHY AND LUDLOW GRISCOM.

THERE is much interest to be obtained from thorough study of the birds of any one region, especially when such study is prolonged over a period of years and comprises the results of numerous observers.

From various and diverse lines of endeavor we always return to a consideration of the avifauna of Long Island, New York, with unabated enthusiasm.

An obvious line of inquiry in this connection is to determine the dates between which the various migratory species are found on the island. Such dates may be of two kinds, those of normal or average occurrence, and extreme dates. Though perhaps of less importance the latter are the more tangible. In determining normal dates it is remarkable with what facility any one observer in any one year may overlook certain species. Satisfactory migration dates cannot well be obtained simply by collecting. A vast number of birds would have to be killed to get anything like good results by this method alone.

The tables in Eaton's 'Birds of New York,' 1909, furnish a valuable statement of extreme migration dates on Long Island, but the status of the various species is naturally enough not discussed in any great detail. Braislin's annotated list (1907), though easier to refer to, is less complete and therefore unsatisfactory in this respect. For present knowledge of migration dates on Long Island, ornithologists are as much indebted to the records and compilations of Mr. William Dutcher as of all other observers taken together.

Long Island has always been considered as a whole. In our opinion there are advantages in treating it otherwise. The waterfowl especially are notably different in their occurrence and numbers at the eastern and western ends of the island. The earliest fall migrants are almost invariably recorded at the eastern end of the island, and many waterbirds linger there much later than at the western end. At first sight this may appear only natural as the

migration route follows the coast-line, roughly speaking. With many of the waterbirds, however, this is not the case. Too many species arrive in spring at the eastern end of the island either before they are recorded at the western end, or in the case of the rarer species they are not recorded at all at the western end. It is accordingly our belief that the majority of the water-birds never see the western end of Long Island, but fly across the ocean to the New Jersey coast. In this connection it is interesting to note that waterbirds are apparently much more numerous on the southern half of the Jersey coast than the northern, indicating possibly more exactly the route taken. Undoubtedly civilization and its attendant evils from the bird's point of view have done much to bring this state of affairs about.

The land birds also furnish interesting corroborative evidence. The outer beaches of the south shore are a favorite migration route with them, and any type of land bird is apt to be found in the bayberries or in the beach grass. Land birds are abundant in the migrations on Fire Island Beach, common on Jones Beach, noticeably less so on Long Beach, and their numbers are insignificant at Rockaway Beach which furnishes much better country for them than Long Beach. During the trips to and from Europe that one of the authors has made during the migrations, land birds have invariably boarded the vessel off Long Island, as far west as Long Beach, but never farther west. There seems then to be excellent evidence to indicate an over sea flight on the part of the land birds as well. Still further evidence is supplied by the study of the records of accidental or casual southern species. It is well known that such wanderers attach themselves to bands of migrants for the sake of company. The great majority of such species recorded for Long Island have been taken at the eastern end of the island.

In the second place, Long Island is sharply divided geologically into a northern and southern half by the terminal moraine. The flora of the two sections is pronouncedly different, and the avifauna is slightly so — about as much difference as there is between the Piedmont and the coastal plain regions of New Jersey. Due to the formation of the coast, the waterfowl are much less abundant on the north shore.

To recapitulate:

1. Birds much commoner at the eastern end of the island than the western: Three Grebes, the Red-throated Loon, the Alcidae, the Jaegers, the Glaucous Gull, Laughing Gull, the Terns, the Shearwaters, Leach's Petrel, most of the Anseres, the Cormorants, the Bittern, Coot, Phalaropes, Dowitcher, Stilt Sandpiper, Knot, Purple Sandpiper, White-rumped Sandpiper, Baird's Sandpiper, Golden Plover, Rough-legged Hawk, Bald Eagle, Duck Hawk, Fish Hawk, Short-eared Owl, Snowy Owl, Snow Bunting, Lapland Longspur, Cliff Swallow.

2. The following water-birds are equally common at both ends of the island: Loon, Kittiwake, Gannet, Red-breasted Merganser, Black Duck, Scaup Duck, Old-squaw, White-winged and American Scoters, Canada Goose, Brant, Herons, the commonest shore-birds.

3. The following are commoner at the western end: Great Black-backed, Herring, Ring-billed and Bonaparte's Gulls, Clapper Rail, Sora, Florida Gallinule, Orchard Oriole, Seaside Sparrow. From this list are excluded several of the rarer land-bird migrants, the greater number of records from the western end of the island being due to the greater number of observers.

4. Species which have increased in numbers at the western end of the island in the last few years due largely to the abolition of spring shooting: *A.* Red-breasted Merganser, Black Duck, Scaup Duck, all three Scoters, Canada Goose and Brant. All but the last two now stay in numbers until the end of May. The Black Duck now probably breeds as far west as Long Beach. *B.* Formerly very rare, now regular in spring are the Dowitcher, Knot and Red-backed Sandpiper. *C.* Greatly increased in numbers are especially the Hudsonian Curlew, Black-bellied Plover, Piping Plover and Turnstone. The Piping Plover now probably breeds as far west as Jones Beach, where pairs are seen the very end of May. Much less common in the fall.

In the present paper, we have also gathered together a few records which we hope will be of service to the numerous observers now interested in Long Island birds.

Podilymbus podiceps. **PIED-BILLED GREBE.**—Unusually numerous in the fall migration of 1916; about 20 were observed in one day (Sept. 18) in the East Bay at Mastic. One observed on Prospect Park Lake, Brooklyn, Oct. 12.

Gavia immer. LOON.— Observed as late in the spring as June 1 (1907, Mt. Sinai) and we presume in fall migration July 9 (1911, Mastic). Mr. W. T. Helmuth reports this species from Easthampton July 6 to 7 (1915). Perhaps these early July birds should be considered as summering or even as stragglers from the spring migration. One, in immature plumage, was seen off the Mastic beach on June 24, 1916. Migrating Loons fly with the bill open. Doubtless so heavy and short-winged a bird requires a great deal of oxygen for protracted flight. The migration of the Loon is a very interesting and irregular one. The species arrives from the north early in August, so far as we know young birds as well as adults, and is frequently met with through the month. A lull then ensues, and during September and October the Loon is usually decidedly uncommon. There is frequently a flight early in November. After another lull the main flight of the fall takes place the latter part of December, and usually by the first of January the wintering individuals are left behind. Their numbers vary greatly in different parts of the island from year to year. The spring migration starts with the first mild weather in March, increasing steadily until the last week of the month and the first week in April, when the species is abundant, traces of the summer plumage being evident. From this time till the 20th of May, very few Loons are seen, at least at the western end of Long Island. Those seen are usually still in the winter plumage even in the middle of May. From May 20 to June 1, there is another big migration of Loons mostly in full summer plumage. They are most abundant from May 24 to May 28, and a few days later only stragglers remain.

Gavia stellata. RED-THROATED LOON.— Six white-throated birds observed off Herod's Point, on the Sound, on August 24, 1905. They were observed from a blind on the beach, and came within thirty feet of the observer. (R. C. M.)

Alle alle. DOVEKIE.— Specimens have recently been sent from Montauk Point to the Brooklyn Museum, as follows: 1 on February 25, 1916; 1, a female, on April 3, 1916; 1, a female, on May 29, 1916. The last bird was perfectly fresh when picked up dead on the beach. Mr. A. H. Helme tells us of Dovekies shot off the south shore of Long Island in June. Mr. W. S. Dana, of Mastic, has a mounted specimen which he collected in Forge River, Moriches Bay, in August, 1913. December 11, 1909 (10 miles off Shinnecock) two hundred seen, apparently the largest number seen in Long Island waters.

Rissa tridactyla tridactyla. KITTIWAKE.— October 13 and 27, 1912 (Long Beach) are the earliest fall dates. The fall of 1912 was characterized by the early arrival of an unusual number of northern species.

Larus hyperboreus. GLAUCOUS GULL.— Recent records for western Long Island are as follows: January 8, 1912 (Manhattan Beach) W. H. Wiegmann; February 12, 1912, March 3, 1912, (Long Beach).

Larus marinus. GREAT BLACK-BACKED GULL.— May 13, 1910 (Long Beach) and April 8, 1912 (Gardiner's Island) latest spring dates.

Larus philadelphia. BONAPARTE'S GULL.— May 19, 1912 (Long Beach) latest spring record.

Larus atricilla. LAUGHING GULL.—A specimen from Great Neck, October 8, 1916, is the latest we know of except for the October 28, 1880 record mentioned by Cooke. Probably the Laughing Gull normally occurs on Long Island shores until about the last of September. May 17, 1911 (Long Beach) recent spring record.

Sterna dougalli. ROSEATE TERN.—During 1915 and 1916 this species has been much more abundant than generally in recent years at the eastern end of Long Island. Specimens collected at Montauk on August 8, 1915, had young mackerel in their stomachs.

Sterna antillarum. LEAST TERN.—Mr. Robert W. Peavey, of Brooklyn, found a pair of Least Terns at Seaford on June 25, 1916. They flew around him closely, approaching within fifteen feet of him, and acted as though they were breeding.

Puffinus borealis. CORY'S SHEARWATER.—

Puffinus gravis. GREATER SHEARWATER.—Abundant off Montauk Point on August 8, 1916, when seven specimens of each species were collected by Mr. Francis Harper and one of the writers.

Puffinus griseus. SOOTY SHEARWATER.—One observed on the water off the beach at Mastic, October 13, 1913. It was attacked by the numerous gulls present and driven back onto the water whenever it attempted to take wing.

Oceanites oceanicus. WILSON'S PETREL.—Twice seen over the sound from the shore at Port Jefferson, each time in September. Many seen from the shore at Eaton's Neck on the Sound, on July 25, 1915. Several collected from the shore at Montauk, during a storm on August 4, 1916. Occasionally numerous off the ocean beach, as on June 30, 1913, when it was estimated that at least a thousand were within binocular range at one time, from a point on the crest of the dunes at Mastic. Many of their feathers were scattered along the line of wash on the beach, particularly primaries, with some tail-feathers, so they were evidently in active molt. Occasionally in summer one sees a few Wilson's Petrels over Great South Bay well inside of Fire Island Inlet.

Sula bassana. GANNETT.—May 25, 1914, (Mastic) appears to be the latest spring date for this species. December 11, 1909 (off Shinnecock), December 27, 1912 (Long Beach) January 5, 1913 (Long Beach), are recent winter records.

Phalacrocorax auritus auritus. DOUBLE-CRESTED CORMORANT.—March 31, 1912 (Long Beach) the earliest spring record; December 14, 1913 (Long Beach) is a recent winter record; July 12, 1911 (off Rockaway Pt.) a recent summer record.

Mergus americanus. AMERICAN MERGANSER.—April 8, 1912 (Gardiner's Island) the latest spring record.

Mergus serrator. RED-BREASTED MERGANSER.—Now remains regularly until the end of May, May 25, 1913 (Jones Beach) being the latest date, over a hundred being then observed.

Anas platyrhynchos. MALLARD.—

Nettion carolinense. GREEN-WINGED TEAL.—

Spatula clypeata. SHOVELLER.—

Dafila acuta. PINTAIL.—

Marila valisineria. CANVASBACK.—In spite of the in some respects backward fall migration this year (1916), many Ducks reached Long Island unusually early, and our earliest dates for the following species, except the Shoveller, were obtained at Mastic. Mallard, two or three, and one Pintail, August 21; Green-winged Teal, a few, September 4. All three species observed with Black Duck. Canvasback, October 11, and Shoveller October 14 (one and two respectively killed by Dr. Rolfe Floyd). The earliest date for Shoveller is October 1 (1913), Quogue, a male and female killed from a flock of three by Mr. H. F. Stone. The rarity of this duck perhaps accounts for its not having been recorded from the island earlier in the season. The Mallard occurs occasionally in winter as well as in migrations. A Mallard observed at Long Beach, March 26, 1911, by Messrs. C. H. Rogers, Ludlow Griscom and G. E. Hix, we consider the earliest spring date. The Pintail in 1916 either wintered or lingered very late in unusual numbers. It was repeatedly observed during December on the lake in Prospect Park, Brooklyn. A flock of about a dozen were observed December 16 at Roslyn and another of thirteen individuals was seen December 24 near East Rockaway.

Mareca penelope. EUROPEAN WIDGEON.—One drake April 5-7, 1912 (Gardiner's Island) has not been recorded.

Chaulelasmus streperus. GADWALL.—A fine drake shot by Mr. Samuel Bettle at the South Side Club, November 27, 1914. Two drakes were shot by Mr. Edwin Thorne at the South Side Club, Oakdale on December 13, 1916, and a female was also killed by another member of the club.

Marila americana. REDHEAD.—Two, March 12, 1911 (Long Beach), a recent spring record for western Long Island.

Marila marila. SCAUP DUCK.—May 30, 1911 (Long Beach) latest spring date.

Marila sp. SCAUP.

Charitonetta albeola. BUFFLEHEAD.

Oidemia americana. AMERICAN SCOTER.

Oidemia deglandi. WHITE-WINGED SCOTER.

Oidemia perspicillata. SURF SCOTER.—Crippled ducks of various species are of course to be found on Long Island during the summer. Individuals of non-breeding species which can not be classed as cripples also occasionally occur. Such are a Scaup over the Narrow Bay, June 26, 1915, a female or immature plumaged Bufflehead May 13, 1916, and a male Bufflehead in summer a few years previously, all observed on the wing at Mastic. Three American Scoters, of which one acted like a cripple, were seen off False Point, Montauk, on August 8, 1915; a White-winged Scoter lay a short distance off shore at Eaton's Neck, on the Sound, for the greater part of the week ending August 6, 1916. Six were seen together off Rocky

Point on August 23, 1905. Over a hundred White-winged and Surf Scoters were seen between Roanoke Point and Orient Point, on June 27-30, 1906. The White-winged Scoter has been observed at Mastic as late in the spring migration as May 23, 1914. Probably non-breeding birds of any of the three Scoters may spend the summer off Long Island. All three species remain regularly until the end of May, the following being the latest dates, American Scoter, May 26, 1912, (Oak Island Beach), White-winged Scoter, May 28, 1911, (Long Beach) Surf Scoter, May 25, 1913 (Jones Beach).

Histrionicus histrionicus. HARLEQUIN DUCK.—Mr. W. S. Dana has an adult male Harlequin taken by him at Smith's Point, Moriches Bay, during the first week of November, 1915.

Somateria spectabilis. KING EIDER.—A female or young male was taken at Mastic early in October, 1912, by Mr. W. S. Dana, who still has the skin.

Branta canadensis canadensis. CANADA GOOSE.—February 12, 1912 (Long Beach) sixty-nine, January 18, 1914 (Long Beach), and February 22, 1914, (Montauk) are recent winter records.

Wintered in unusual numbers in 1914-15; a flock of about four hundred birds observed at Mastic, January 30, 1915.

Branta bernicla glaucogastra. BRANT.—February 12, 1912 (Long Beach), nine, January 18, 1914 (Long Beach) seventy-three; February 22, 1914, (Montauk) five; are recent winter records. On December 28, 1913 (Jones Beach) 636 birds were seen, a remarkable number so late in the season.

Olor columbianus. WHISTLING SWAN.—Mr. Wm. T. Helmuth observed three Swan at Shinnecock January 1, 1911.

Herodias egretta. EGRET.—An Egret spent the greater part of the summer of 1916, at Setauket. It was seen several times by one of the writers on July 22, before which it had been several weeks in the vicinity.

Butorides virescens virescens. GREEN HERON.—October 13 is our latest date (Port Jefferson, 1915).

Rallus crepitans crepitans. CLAPPER RAIL.—January 28, 1912 (Long Beach), two, a recent winter record.

Fulica americana. COOT.—The only winter record we know of is a single bird observed at Mastic, February 12, 1916.

Steganopus tricolor. WILSON'S PHALAROPE.—Mr. H. F. Stone of Lawrence has in his collection an immature bird taken there this year (August 19, 1916).

Macrorhamphus griseus griseus. DOWITCHER.—May 24, 1914 (Jones Beach) twenty-eight, a recent spring record near New York City.

Tringa canutus. KNOT.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.

Aegialitis semipalmata. SEMIPALMATED PLOVER.—May 26, 1912 (Oak Island Beach) one; May 25, 1913 (Jones Beach) two; May 24, 1914 (Jones Beach) four; are recent spring records for Knot on western Long

Island. Mr. E. P. Bicknell writes that he observed "on June 22 at Long Beach (1916) a flock of twenty-one *Ereunetes pusillus* and with them one *Ægialitis semipalmata* and one *Tringa canutus*." This is the latest spring date for all three species.

Arquatella maritima maritima. PURPLE SANDPIPER.—Three seen November 9, 1912 (Manhattan Beach) by W. H. Wiegmann.

Pelidna alpina sakhalina. RED-BACKED SANDPIPER.—Ninety-six, May 25, 1913 (Jones Beach), an unusual number for so rare a spring migrant.

Calidris leucophæa. SANDERLING.—January 4, 1910 (Long Beach) and December 4, 1913 (Long Beach) are recent winter records. A red-breasted specimen was shot by one of the writers from a flock on the sea beach north of Great Pond, Montauk, August 3, 1915.

Limosa fedoa. MARBLED GODWIT.—Now rarer than the Hudsonian Godwit. Two were shot by Mr. W. S. Dana on Moriches Beach, August 10, 1910, and the skin of one preserved.

Limosa hæmastica. HUDSONIAN GODWIT.—

Tryngites subruficollis. BUFF-BREASTED SANDPIPER.—The status of these two rare shore-birds on Long Island seems not to have changed appreciably in the last twenty-five or thirty years. There was a Buff-breasted Sandpiper in the collection of the late deL. Berier from Gowanus Bay presumably in the late eighties, though it bears no further data. We learn that the 1888 specimen recorded by Dutcher (Auk 1889) as from Mastic was collected by Dr. Rolfe Floyd. Messrs. Wm. T. and J. L. Helmuth inform us that two have recently been taken near Easthampton, viz. on September 7, 1910, and September 4 (Sagaponack Beach, Bridgehampton), 1916. In a letter recently received, Mr. W. F. Hendrickson writes that his brother (Mr. J. H. Hendrickson) reports "five specimens of the Buff-breast within the past few years." Probably Hudsonian Godwit stragglers occur each year—we know of one (an adult taken at Mastic August 21, 1915, and another (immature) taken at the same place October 6, 1916.

Bartramia longicauda. UPLAND PLOVER.—Reported by Mr. Henry Thurston from Floral Park, October 20, 1916, the latest Long Island date.

Actitis macularia. SPOTTED SANDPIPER.—April 21, 1912 (Long Beach) earliest spring arrival.

Numenius hudsonicus. HUDSONIAN CURLEW.—Long Beach, May 31, 1914, C. H. Rogers, is the latest spring date of which we know.

Squatarola squatarola. BLACK-BELLIED PLOVER.—One hundred and fifty May 27, 1911 (Long Beach); three hundred May 25, 1913 (Jones Beach); four hundred May 24, 1914 (Jones Beach); to show increase of this species in the spring. Two seen at Long Beach, November 26, 1916, obviously not cripples, the latest fall date.

Ægialitis meloda. PIPING PLOVER.—Two November 7, 1911 (Long Beach) latest fall date; five pairs seen May 24, 1914 (Jones Beach).

Arenaria interpres morinella. RUDDY TURNSTONE.—Twenty-four

and one hundred and six May 27, 1911 (Long Beach); sixty May 25, 1913 (Jones Beach); fifty-five May 24, 1914 (Jones Beach).

Zenaidura macroura carolinensis. MOURNING DOVE.— March 14, 1915, near Valley Stream, is the earliest spring record.

Cathartes aura septentrionalis. TURKEY VULTURE.— Mr. Wm. T. Helmuth reports one from Easthampton on June 24, 1914. Another was seen by one of the writers at East Quogue on July 4, 1911. It is a rare bird on the island, especially so far east.

Astur atricapillus atricapillus. GOSHAWK.— An adult male was taken by Mr. F. M. Schott at Half Hollow Hills, near Melville, on November 12, 1915.

Falco peregrinus anatum. DUCK HAWK.— Apparently a late spring visitor to the Long Island marshes. Observed both 1913 and 1914 on our Shore-bird trips. On May 24, 1914, a Duck Hawk was seen giving chase to a flock of "oxeyes." It overtook the last bird, and struck at it eleven times. Each time the "oxeye" at the last moment twisted and dodged. The hawk then played the "sour grapes" act; it did n't care for "oxeyes" anyhow, and flew off to the northward.

Falco columbarius columbarius. PIGEON HAWK.— This hawk was unusually numerous in the fall migration of 1916; the last bird seen on October 15, Mastic, a very late date for the species; oddly enough, Mr. C. H. Rogers observed one at Long Beach on the same day.

Asio flammeus. SHORT-EARED OWL.— May 17, 1911 (Long Beach) is the latest spring date for western Long Island. There is a possibility it was breeding.

Coccyzus americanus americanus. YELLOW-BILLED CUCKOO.— One seen at Queens, May 7, 1916, the earliest spring date.

Sphyrapicus varius varius. SAPSUCKER.— Garden City, April 20, 1916, is our earliest date; Wading River, December 27, 1906, the latest.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.— A rare summer resident on the island. A pair of this species nested in 1896 and 1897 in an old willow tree on a lawn at Flushing. The tree was blown down, and the birds did not appear the next year.

Otocoris alpestris alpestris. HORNED LARK.— October 27, 1912 (Long Beach) is apparently the earliest fall date.

Molothrus ater ater. COWBIRD.— January 12, 1912 (Manhattan Beach) by Mr. George E. Hix is the only recent winter record for western Long Island known to us.

Plectrophenax nivalis nivalis. SNOW BUNTING.— March 26, 1911 (Long Beach) latest spring date.

Calcarius lapponicus lapponicus. LAPLAND LONGSPUR.— This species, though of regular occurrence at the eastern end of Long Island is very rare near New York City. Recent records are November 26, 1910 (Manhattan Beach) by W. H. Wiegmann and G. E. Hix; November 25, 1911 to February 11, 1912 up to 5 individuals present (Manhattan Beach); November 26, 1916, one (Long Beach).

Poœcetes gramineus gramineus. VESPER SPARROW.— January 18, 1912 (Long Beach), and December 26, 1914 (East Rockaway), are recent winter records.

Passerculus princeps. IPSWICH SPARROW.— April 21, 1912 (Long Beach) latest spring date.

Passerculus sandwichensis savanna. SAVANNAH SPARROW.— May 25, 1913 (Jones Beach) the latest spring date, if not breeding.

Passerherbulus henslowi henslowi. HENSLOW'S SPARROW.— For several years we have been aware that the Henslow's Sparrow was summing rather commonly at Mastic near the landward edge of the meadows where these are quite fresh (see Bird-Lore, December, 1913), but know of no nests having been found until May 30, 1916, when one of the writers in company with Mr. Charles H. Rogers flushed a Henslow's Sparrow from a nest with eggs, in a dry field with sparse grass about a stone's throw from where the land dropped away to a tree-bordered creek. The birds had been seen in the vicinity for about two weeks previously, and when first noticed were assumed to be migrants, the locality being far removed from and quite unlike that in which the bird usually summers. The young hatched, but were found dead in the nest on June 10, very likely as a result of heavy rain. The situation was an exposed one, probably more so than that to which the species is accustomed. In this connection we note that Meadow-larks and Grasshopper Sparrows which commonly nest in such places with scant grass, build arched nests, whereas that of the Henslow's Sparrow was perfectly open.

Passerherbulus maritimus maritimus. SEASIDE SPARROW.— December 27, 1912 (Long Beach) the only winter record for the State. The three birds seen remained several weeks.

Spizella passerina passerina. CHIPPING SPARROW.— One bird observed at East Rockaway, December 24, 1916, constitutes the only winter record for Long Island known to the writers.

Melospiza lincolni lincolni. LINCOLN'S SPARROW.— One seen on the ridge north of Queens, on May 7, 1916. This is the earliest of which we know.

Cardinalis cardinalis cardinalis. CARDINAL.— Of late years very rare. A male in the cedar grove at Sheepshead Bay observed by Messrs. C. H. Rogers, and G. E. Hix, January 1, 1912, is the only recent occurrence of which we are cognizant.

Zamelodia ludoviciana. ROSE-BREADED GROSBEAK.— May 24, 1914 (Jones Beach) is the latest spring migration date for this species.

Progne subis subis. PURPLE MARTIN.— May 19, 1912 (Long Beach), one of the few spring migration dates for places on the island where the species does not breed.

Vireosylva philadelphia. PHILADELPHIA VIREO.— One observed September 28, 1913, Oyster Bay (J. T. N.) is the latest Long Island date.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO.

Dendroica tigrina. CAPE MAY WARBLER.—

Dendroica magnolia. MAGNOLIA WARBLER.—

Dendroica palmarum palmarum. PALM WARBLER.—

Wilsonia pusilla pusilla. WILSON'S WARBLER.—

Setophaga ruticilla. REDSTART.—In the fall of 1916 migrating warblers lingered unusually late, and we obtained our latest Long Island dates for the following birds, all at Mastic; Wilson's Warbler, October 12; Cape May Warbler October 14; Palm Warbler and Redstart October 15; Blue-headed Vireo October 22; to these should be added the Magnolia Warbler observed at Long Beach by Mr. Griscom, October 22. Mr. C. H. Rogers observed a Palm Warbler at Long Beach on October 15.

Helminthos vermivorus. WORM-EATING WARBLER.—May 18, 1912 (Prospect Park). Mr. Chas. Johnston.

Vermivora pinus. BLUE-WINGED WARBLER.—July 27, 1912 (off Long Beach), an individual was seen to fly on board a transatlantic liner from the north. An interesting record to prove how early this species leaves its breeding grounds.

Vermivora peregrina. TENNESSEE WARBLER.—One observed May 23, 1914, Mastic (J. T. N.) the latest spring date.

Dendroica tigrina. CAPE MAY WARBLER.—May 5, 1911 (Prospect Park) Mr. Chas. Johnston; August 28, 1915 (Mastic) earliest fall date.

Dendroica palmarum hypochrysea. YELLOW PALM WARBLER.—April 6, 1912 (Gardiner's Island) earliest spring date. One bird observed at Garden City, January 3, 1917 (J. T. N.) is the only winter record known to the writers.

Seiurus noveboracensis. WATER-THRUSH.—April 29, 1916, (Long Beach) is our earliest spring date.

Seiurus motacilla. LOUISIANA WATER-THRUSH.—April 5, 1914, (Flushing), H. S. Boyle, is the earliest spring date.

Geothlypis trichas trichas. NORTHERN YELLOW-THROAT.—April 20, 1913 (Long Beach) earliest spring date.

Anthus rubescens. PIPIT.—January 4, 1910 (Long Beach) is a recent winter record.

Telmatodytes palustris palustris. LONG-BILLED MARSH WREN.—Three or four October 22, 1916, Mastic, were evidently not wintering birds; and are the latest migration date for the species.

Sitta canadensis. RED-BREASTED NUTHATCH.—April 20, 1913, (Long Beach) earliest spring arrival.

Hylocichla mustelina. WOOD THRUSH.—Wood Thrushes at Hauppauge, October 12, 1915, and Mt. Sinai, October 13, 1915 are late, but not the latest records for Long Island.

PERSONALIA IN ORNITHOLOGY — REPORT OF THE
COMMITTEE ON BIOGRAPHY AND BIBLIOGRAPHY.¹

BY T. S. PALMER.

THE term 'personalialia' is employed in several foreign journals to include biographical notices, accounts of collecting expeditions and personal notes regarding the activities of ornithological workers in the museum or in the field. Such data though brief are not only interesting, but often of much historical value in shedding light on the progress of ornithological science. Too little attention has hitherto been paid in this country to the personal side of ornithological activity, or to the circumstances under which the specimens which form the basis of our systematic work have been collected. For a century and a half we have been so occupied with the making of ornithology that we have had little time to consider the makers of the science.

If more were known of the circumstances under which certain type specimens were collected or described and more facts were available regarding the methods of work of early ornithologists and the routes of field collectors much of the uncertainty concerning the type localities of some species would disappear and some of the troublesome questions in synonymy would be cleared up.

The time is at hand when more information along these lines will be demanded. In revising groups of birds it becomes necessary to review the results of earlier workers to ascertain where the specimens were collected, in order to determine the type localities of these species and tell whether or not they were different from the material under examination. With the greatly increased popular interest in ornithology there is also a demand on the part of teachers and general readers for more information regarding the personal side of bird study, for details which will make an author mean something more than a mere name, which will make him stand out as a human being and which will answer inquiries regarding his appearance, personal characteristics and methods of work.

¹ Presented at the 34th Stated Meeting of the A. O. U., Philadelphia, Nov. 16, 1916.

The names of Audubon, Baird and Coues at once call to mind a host of incidents associated with their work, but the names of Boddaert Brünnich and Pontoppidan recall little more to the average reader than obscure references in the Check-List.

At the 33d Annual Meeting of the American Ornithologists' Union held in San Francisco in May 1915, a Committee on Biography and Bibliography was appointed consisting of Palmer, Cooke Deane, Richmond and Stone. The necessity for such a committee became evident during the preparation of the Ten Year Index to 'The Auk,' when in order to bring the data regarding authors and biographies up to the requirements of modern bibliography and to the standard of the rest of the Index it became necessary to add several members to the Index Committee to assist in completing names and collecting biographical data. The information thus obtained was utilized in the Index of Biographies published in the introduction to the Ten Year Index (pp. xi-xxiii) and in revising the list of deceased members of the Union in 'The Auk' for April, 1915.

In order to outline the work of the committee, a letter was addressed by the chairman on September 30, 1915, to each of the members calling attention to the fact that the duties intrusted to the committee necessitated a definite plan of work in biography and bibliography; that in biography the first duty was to assist the editor of 'The Auk' in the preparation of current obituary notices, in bibliography it was evident that the committee had neither the time nor means to undertake a comprehensive work such as that projected by the late Dr. Elliott Coues, but that a practical plan could probably be worked out which would result in a material contribution to existing bibliographies of ornithology. A tentative plan was suggested which met the approval of the members and with some minor modifications has formed the basis of the activities of the year. Under this plan the work was distributed under three headings — Biography, Bibliography and Manuscripts — including ten subjects, as follows:

(a) In Biography

- 1 Biographies, including obituary notices of A. O. U. members.
- 2 Brief sketches of the foreign members of the A. O. U.
- 3 An index to published portraits of A. O. U. members.

- 4 An index to published portraits of other ornithologists.
- 5 An index to the published correspondence of Audubon.
- (b) In Bibliography — a bibliography of bibliographies including
 - 6 A brief list of the more important bibliographies of American and Foreign birds including those in State lists.
 - 7 An index to published bibliographies of authors.
 - 8 An index to information on routes of ornithological collectors.
 - 9 Special bibliographies of subjects not included in existing bibliographies, for example bird photography, hybridism and indexes to papers on the more important collections of birds, type specimens, etc.
- (c) In Manuscripts
 - 10 Investigation of the present location and condition of some of the more important ornithological manuscripts, published and unpublished, including the papers and correspondence of Bendire, Cooper, Coues, Wilson and others.

WORK OF THE YEAR.

Before reviewing the work accomplished during the past year it is proper to refer to the severe loss which the committee has sustained in the death on March 30, 1916, of Prof. Wells W. Cooke, one of the most active members. Specially qualified for research of this kind, a tireless worker, and deeply interested in the topics assigned him, his loss has been a serious handicap. Naturally the work in which he was engaged, the preparation of a list of bibliographies in State lists and an index to publications containing information on routes of ornithological collectors, has been suspended since his death.

Of the ten subjects mentioned in the above outline of work, five have received special attention and some progress made in each case.

Biography.— The published records of the Union should contain some notice, however brief, of every person who is a member of the Union at the time of death. At present these notices appear in 'The Auk,' and it is often difficult for the editor, in addition to his

other duties, to collect the necessary data for a biographical sketch. An important part of the duties of the Committee on Biography is to assist in the preparation of obituary notices.

Even more interest attaches to the personal history and work of members who are still alive than to those whose labors have been completed. In these days of "Who's Who" and similar biographical dictionaries it might seem that facts regarding the biography of members were readily accessible, but such proves not to be the case. The Committee has, therefore, undertaken the preparation of an index of the published biographical sketches of members of the Union. This index now contains references to sketches of nearly all of the Fellows, about one third of the Members and a few of the Associates. Every member of the Union should have on file with the Secretary a record of his full name and address and a reference to any sketch of his work which may have been published.

Portraits.—Portraits of A. O. U. members are published from time to time in various places, but are widely scattered and very few of them are mentioned in the great index of portraits prepared by the American Library Association. As one feature of its work the Committee has undertaken an index to published portraits of A. O. U. members. This index now contains entries for about 170 members, 113 of whom are living and 57 deceased. In this list are 30 Fellows, 11 Corresponding Fellows, 28 Members, and 34 Associates. The entries in the deceased list are about equally divided between Fellows, Honorary Fellows, Corresponding Fellows, and Associates.

Audubon Correspondence.—Many letters of Audubon have been published from time to time and a considerable volume of his correspondence is now available to the general reader. Mr. Ruthven Deane who, by reason of his familiarity with Auduboniana, is specially qualified for the task has undertaken to prepare a list of letters of Audubon which have thus far appeared in print.

Bibliography.—Bibliographies and indexes form the tools of the scientific student and are as essential for his work as a good camera to a photographer or a telescope to an astronomer. Attention has thus far been concentrated on the preparation of a list of author's bibliographies. In the lists of their papers which have

been published by a number of ornithologists appear many titles which are easily overlooked and are not included in ordinary bibliographies. About 40 such lists have already been found and the number of titles included in them is about 6,800.

Manuscripts.—Manuscripts, like type specimens, are unique and highly prized by their owners. As a rule not many ornithological manuscripts are apt to be found in any one place outside the archives of a few of the larger museums. The manuscripts which are likely to possess the greatest historical interest are diaries, personal letters from ornithologists, and copies of unpublished, or in a few instances published works. The Committee has been successful in locating several interesting manuscripts which may be briefly mentioned.

In the Bancroft Library of the University of California, Berkeley, Calif.—

- (a) The unpublished manuscript and plates of L. Belding's Water Birds of California.
- (b) The unpublished manuscript and plates of Col. A. J. Grayson's Birds of Mexico.

Both of these manuscripts are in an excellent state of preservation, are carefully preserved in steel cases, and are readily accessible.

In the possession of Mr. W. O. Emerson, Haywards, Calif.—

- (a) A brief unpublished description of the 'Quesal' by Charles Lucien Bonaparte.
- (b) Manuscript copies of Bonaparte's Am. Ornithology, vols. II, III and IV, interesting historically because they are in Bonaparte's handwriting.
- (c) Manuscript of Dr. J. G. Cooper's Report on the Survey of Oregon and Washington and the Birds of California (the latter incomplete).
- (d) Several diaries of Dr. Cooper, 1858–1860.

In the Manuscript Division of the Library of Congress, Washington, D. C.—

- (a) Part of the original diary of Titian Ramsay Peale on Long's Expedition to the Rocky Mountains, 1 vol. May 3 to Aug. 1, 1819.
- (b) Four volumes of the diary of Peale on the Wilkes Exploring Expedition, 1839 to 1842.

Apparently the complete diaries of this latter expedition filled 8 volumes of which the 2d, 3d, 5th and 7th are in the Library of Congress.

- (c) Fourteen volumes of papers of Dr. Jean Louis Berlandier, including an unpublished work in 7 volumes entitled 'Voyage au Mexique,' 1826 to 1834, containing a full account of Berlandier's travels during his first seven years in Mexico.

In the possession of Kenneth F. Beal, Branchville, Md.—

- (a) A valuable set of diaries of the late Prof. F. E. L. Beal extending over a period of nearly 40 years.

In the possession of the chairman of the committee.—

- (a) A copy of the field diary of Titian R. Peale on his trip to Florida in 1824-25.

Inquiries concerning the papers of the late Dr. Elliott Coues have thus far met with no success, and the whereabouts of his correspondence is at present unknown.

The Committee has received a generous offer of the papers and correspondence of the late Major Charles E. Bendire on condition that satisfactory arrangements can be made for their permanent preservation in a place where they will be safe and readily accessible. It is hoped that the acquisition of this valuable collection of the papers of one of our most prominent field ornithologists can be consummated in the near future.

FUTURE WORK.

The work for the immediate future will be continued along the lines indicated, and will be expanded from time to time as opportunity offers. In biography, the series of brief sketches of foreign members should be taken up as soon as the necessary data can be obtained. The deceased list of the Union now includes about 250 names and sketches of about 190 of these persons have been published in 'The Auk' and an Index to them in the introduction of the Ten Year Index to 'The Auk.' With the index to published biographies of living members now being prepared, members of the Union will have ready references to most of the biographical material published in this country regarding the membership of

the A. O. U. In addition much material has appeared in the pages of 'The Ibis,' 'London Field' and other foreign journals and in foreign collections of biography all of which should be made accessible.

This work should not be confined to members of the Union but should be extended at least to include all persons whose names are associated with systematic work on North American birds. Considerable material has already been collected along this line by the chairman of the committee. With the activity now displayed in the study of South American ornithology by several museums in this country it would undoubtedly be helpful to have as much information as possible relative to the work of those who have collected or described material from the wonderfully rich region south of Panama.

It is rather remarkable that although biography forms such an important part of the literature in a general library, and so much has been published regarding the lives of workers in astronomy, botany, and medicine, such information concerning ornithologists is so scattered and in many cases so fragmentary. Particularly is this true of American ornithologists only half a dozen of whom — Audubon, Bachman, Baird, Boardman, Scott, Wilson, and possibly one or two others, have been considered sufficiently important to have special volumes devoted to their lives. Audubon and Wilson have each been the subject of several volumes, while the labors of such prominent workers as Dr. Coues and others are recorded only in memorial addresses or in brief sketches in journals or reviews. More attention has been paid to this subject in England and Germany where biographical information is published more fully and thus made more accessible. It is something more than mere gratification of curiosity to be able to find something about the work of ornithologists who have become eminent or whose labors are now finished. Although it may be interesting to know that Brünnich described the Loon (*Gavia immer*), and the genus *Plautus* for the Great Auk, and that his work is commemorated in the name of one of the species of murre, it is more important to know that Dr. Morton Thrane Brünnich, author of the genus containing the emblem of the A. O. U. was a contemporary of Linnaeus, that he was one of the leading Danish zoologists and that he

died in 1827 at the age of 90 (an age attained by few ornithologists). In order to compare his work with that of modern ornithologists it is necessary to know something of his methods and the material at his disposal and it is also important to have access to a sketch of his life in English for the benefit of those who cannot read his biography published in Danish.

It will soon be time to prepare a new edition of the Check-List. In addition to a reëxamination of some of the type localities which evidently require revision, the next edition should show the date when the type was collected of each species which was based on a definite specimen so as to indicate whether or not the bird was in breeding plumage. Whenever possible a statement should be added to indicate whether or not the specimen is now extant. Much of this information can be secured only through collateral sources of information, by examination of special papers on type specimens and museum collections, by study of the routes of collectors and by examination of original field diaries. Research along these lines promises some interesting and important results and the desirability of the early preparation of the biographies and routes of collectors and of special papers on collections is self evident.

To the officers of the Union the committee on biography can render much service: To the secretary in perfecting the record of full names and addresses of the members, to the treasurer in recommending new names for membership and in following up some of the members who have dropped out, and to the editor in supplying data for obituary notices and in preparing notices of deceased members.

In this connection an invitation is extended to any person who may be interested in the work to coöperate with the committee in its projects in biography or bibliography; and especially to any person who may know of the existence of ornithological manuscripts or diaries, to communicate with the committee in order to assist in preserving and making known material which may be of great historical value in working out some of the problems of systematic ornithology.

REMARKS ON COLORADO BIRDS.

BY WILLOUGHBY P. LOWE, M. B. O. U.

THE following notes relate to some birds occurring in Pueblo or Huerfano Counties about which a few observations made between the years 1888 and 1901, may be of interest to future workers on Colorado ornithology. At that time when the country southwest of Pueblo was free range and my daily occupation was to ride it, gun in hand, I had exceptional opportunities to study the birds. Since those days it is much changed and farms and farming have taken the place of a free, wild expanse of country and bird and animal life must necessarily change also. Birds like the Wild Turkey were practically extinct in 1888 and are now never likely to be seen again in a wild state. On the other hand artificial ponds and increased vegetation will no doubt attract birds not seen in those days. The late Prof. W. W. Cooke and Mr. Wm. Sclater have written most useful works on Colorado birds. In these books there are mentioned some species whose occurrence at certain times of the year or whose nesting in this district is doubtful or unrecorded. It is in such cases where possible that I have given a note on the subject trusting that they will be acceptable to those who are still working on Colorado birds.

Pelecanus erythrorhynchos. AMERICAN WHITE PELICAN.—I have a fine female killed on Lake Minnequa, Pueblo. This species formerly occurring quite plentifully on migration has been so persecuted on arrival that very few if any survived to continue their journeys to and from their breeding grounds so that latterly it was less often seen.

Pisobia maculata. PECTORAL SANDPIPER.—Usually very common during wet seasons in Pueblo County out on the open plains where large sheets of water often remain for a month or two in the spring and fall.

Callipepla squamata. SCALED QUAIL.—Previous to my recording the capture of this species in 'The Auk' in 1895 I had on two occasions four years before put up quail on dry hillsides which I believe belonged to this species and I therefore have no doubt that Prof. Cooke's statement that it had been known to the cowboys many years ago is quite correct.

Meleagris gallapavo merriami. MERRIAM'S TURKEY.—The only time I met with the Wild Turkey in Pueblo Co. was in the spring of 1895

in some thick piñon trees. Unfortunately I was not able to shoot it, but it probably belonged to this subspecies.

Columba fasciata fasciata. BAND-TAILED PIGEON.—During the breeding season and summer months these birds are usually seen singly or in pairs, but during the autumn in the Red Cañon, Wet Mts., Huerfano Co., they congregate in large flocks of several hundred birds prior to their departure south.

Archibuteo lagopus sancti-johannis. AMERICAN ROUGH-LEGGED HAWK.—This species is not plentiful in Pueblo Co., and I have not observed it in Huerfano Co. I have seen it chiefly in the spring and fall, usually perched on a fence post.

Thrasaëtus harpyia. HARPY EAGLE.—This is only an accidental visitor to Colorado. One was shot by Geo. Cress of Lees, Pueblo Co., some years ago and preserved by Doertenbach of Pueblo, who informed me upon inquiries that there was no doubt as to its identification. A short notice mentioning its capture appeared in the "Field and Farm" newspaper of Denver.

Haliaëtus l. leucocephalus. BALD EAGLE.—Seen on only two occasions in Pueblo Co. during the spring, flying along the edge of a mesa.

Falco mexicanus. PRAIRIE FALCON.—Occurs in Pueblo Co. at all times of the year. I have taken a specimen in January.

Pandion haliaëtus carolinensis. AMERICAN OSPREY.—I have only noticed these birds in Pueblo Co. during the spring at which season I obtained a nice specimen in the St. Charles Cañon.

Otus asio maxwelliæ. ROCKY MOUNTAIN SCREECH OWL.—Both *maxwelliæ* and *aikeni* occur in Pueblo Co. Nests may be found in holes of juniper trees. I agree with Mr. Slater who doubts whether these two subspecies can be kept separate, and a large series if collected would probably prove them to be synonymous. They feed on mice and grasshoppers.

Speotyto cunicularia hypogæa. BURROWING OWL.—In Pueblo Co. I have never met with these birds during the winter months and I do not believe that they winter here.

Dryobates scalaris bairdi. TEXAN WOODPECKER.—This is probably the rarest woodpecker of the district and in its habits differs from all the others by its love for cactus bushes which it climbs readily, being quite indifferent to the terrible spikes. It is also found, though more rarely, in the juniper and piñon trees.

Cypseloides niger borealis. BLACK SWIFT.—I have never seen these birds in Pueblo Co., but I once saw a single individual on the plains at about 6,000 feet in Huerfano Co. during June, 1892.

Selasphorus platycercus. BROAD-TAILED HUMMINGBIRD.—Nests regularly in Pueblo Co., usually in scrub oak bushes.

Pica pica hudsonia. AMERICAN MAGPIE.—This variety differs in its habits from the European bird by its excessive noisiness.

Corvus corax sinuatus. WESTERN RAVEN.—Nests regularly in the St. Charles Cañon, Pueblo Co.

Cyanocephalus cyanocephalus. PIÑON JAY.—A common resident in Pueblo and Huerfano Cos., resting in colonies in the piñon trees. When the corn is ripe large flocks do considerable damage.

Molothrus a. ater. COWBIRD.—Common and breeds regularly in Pueblo Co., where the young may be seen yearly fed by Gnatcatchers. It is rather strange that I have never known them to lay their eggs in the nest of any other species though they doubtless do so.

Hesperiphona vespertina montana. WESTERN EVENING GROSBIRD.—Occurs regularly every winter though some years more abundantly than others feeding on the kernels of juniper berries. They frequently remain until quite late in the spring.

Cardinalis cardinalis cardinalis. CARDINAL.—I have a fine male obtained by the late Capt. Ingraham near Beulah, Pueblo Co. Whether it was an escaped bird or not it is impossible to say.

Guiraca caerulea lazula. WESTERN BLUE GROSBIRD.—Nests regularly in the St. Charles Cañon, but never very plentiful.

Calamospiza melanocorys. LARK BUNTING.—During some years these birds nest by countless thousands in Pueblo Co., where their pleasing song and pied plumage must attract the most casual observer. At other times very few are to be seen.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—Scarce in Pueblo Co. I have only seen and taken one specimen.

Bombycilla garrula. BOHEMIAN WAXWING.—Occurs both in Pueblo and Huerfano Cos. The enormous quantities that visit Pueblo Co. during some winters is astonishing, densely packed flocks two miles long and a quarter of a mile wide occur. When a Pigeon Hawk dashes into their midst the sound of their wings must be heard to be appreciated. They feed on juniper berries which grow along the edges of the mesas, and by preference those that have a southern aspect.

Bombycilla cedrorum. CEDAR WAXWING.—A very scarce bird which I have obtained occasionally in the fall in Pueblo Co.

Dendroica townsendi. TOWNSEND'S WARBLER.—In Mr. Drew's excellent paper on Colorado birds published in 'The Auk' in 1885, this species is included in the breeding birds which is doubtless quite correct. In the Wet Mts., Huerfano Co., though I have unfortunately never visited the district early enough to find nests, I have found old birds at the end of the summer together with young, which were no doubt reared there. They frequent the lonely pine forests in company with tits, vireos, nuthatches and other warblers.

Oreoscoptes montanus. SAGE THRASHER.—Curiously I have only noticed these birds in the fall in Pueblo Co., at which season they are very abundant in the juniper country. They are remarkably tame and I have known them to come into my tent for a drink of water.

FURTHER NOTES ON ALABAMA BIRDS.

BY LEWIS S. GOLSAN AND ERNEST G. HOLT.

SINCE the publication of the 'Birds of Autauga and Montgomery Counties, Alabama' (Auk, 1914, pp. 212-235), seven birds have been added to the list and additional observations made which seem worthy of publication. The capture of *Nuttallornis borealis* furnishes the basis of the second published record (to the knowledge of the writers) of this species for the State, Saunders (Auk, 1908, p. 418), publishing the first. It seems too that Avery (American Field, Jan. 3, 1891, p. 8) published the only previous note on *Spinus pinus*; and the present record of the nesting of *Thryomanes bewicki* probably indicates the southern breeding limit for the species within the State. With one exception, the following notes were made by the senior author.

185. **Gallinula galeata.** FLORIDA GALLINULE.—A specimen, probably injured while in flight by striking a wire or other object, was picked up in a yard in the heart of Montgomery on May 22, 1914. It is preserved in the Museum of the State Department of Archives and History.

186. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.—Male taken in Bear Swamp, Autauga County, October 17, 1915.

187. **Spinus pinus.**—PINE SISKIN.—Ten or fifteen seen near Prattville, April 25, 1914. November 18, 1916, two were taken from a flock of about thirty at Booth.

188. **Passerherbulus henslowi henslowi.** HENSLOW'S SPARROW.—Male taken in wet woods near Autaugaville, March 11, 1915.

Iridoprocne bicolor. TREE SWALLOW.—Fine male taken near Autaugaville, October 3, 1914.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—Now known to breed. May 17, 1914, five heavily incubated eggs were found in a nest of pine needles and trash at end of 6-inch tunnel in ditch bank near Prattville. Tunnel about one foot below top of bank and about nineteen feet above bottom of ditch. May 21, 1916, near Prattville, six eggs (five nearly hatched and one, smaller than others, fresh) were discovered in nest of pine and deciduous leaves at end of 20-inch tunnel in sandy bank near Pine Creek.

189. **Vermivora peregrina.** TENNESSEE WARBLER.—Immature male taken in Bear Swamp, October 17, 1915.

Thryomanes bewicki bewicki. BEWICK'S WREN.—Prattville, Ala.,

March 26, 1916, seven fresh eggs collected from nest of large twigs, lined with cotton, feathers and other soft material, placed in a bucket lying on a shelf in an old blacksmith shop. The nest was completed over 10 days before first egg was laid. Bird was removed from nest by hand so identification is certain.

190. **Troglodytes aëdon parkmani.** WESTERN HOUSE WREN.—A specimen taken February 5, 1916, on Pine Creek near Prattville, and now in the museum of the State Department of Archives and History, was identified by Dr. H. C. Oberholser as this subspecies. Other House Wrens were seen January 14, 1915, and January 8 and October 23, 1916, near Autaugaville.

191. **Hylocichla fuscescens fuscescens.** VEERY.—September 17 and 18, 1915, thirty-five or forty were seen on northern edge of Bear Swamp and two specimens were taken. Others seen October 17 and 22.

ONTARIO BIRD NOTES.

BY HOYES LLOYD.

As most of the notes mentioned below are records of occurrence or breeding of birds near Toronto, it may be of interest to consult a very excellent description of the surrounding country and general topography given by Mr. J. H. Fleming in his 'Birds of Toronto, Ontario,' ('The Auk,' Vol. XXIII).

The following notes are largely the result of personal observations made during ornithological jaunts and collecting work during the past fifteen years. Most of the work has been done at Toronto, Ontario.

I am sincerely indebted to Dr. Jonathan Dwight and Mr. J. H. Fleming for assistance in comparing and describing specimens.

Limosa hæmastica. HUDSONIAN GODWIT.—This species is rare in Ontario and this record may be of interest.

On October 18, 1916, Mr. H. Townson of Toronto shot a specimen at Conroy's Marsh, Carlow Township, Hastings County, Ontario. Mr. A. S. Goss, who was on a hunting trip with Mr. Townson, obtained this speci-

men and gave it to me in the flesh. I found it to be a female in the immature plumage and it is now in my collection, No. 1491.

Corvus corax principalis. NORTHERN RAVEN.—On one of the many lovely lakes in the Temagami Forest Reserve, District of Nipissing, Ontario, a rocky promontory rises rather abruptly from the water level to a height of perhaps one hundred and fifty feet.

As I was paddling past the foot of this cliff on June 9, 1909, a raven flew from the face of the cliff and quickly disappeared in the forest, its flapping and sailing flight identifying it immediately, and, as it flew, it uttered a harsh, guttural croak.

I soon noticed its nest, about fifteen feet from the top of the cliff. It appeared large and coarsely built of sticks, but neatly fastened in a small crevice of the rocks.

Wishing to photograph the nest, I strapped my camera to my waist and was soon climbing over the tumbled rock talis at the foot of the cliff. As I went up, the footing became less secure until finally I was clutching at lichen-covered rocks to cling to the narrow ledges. Finally, an overhanging wall made further progress impossible and I was still far from the nest. So I came down and went around to the top of the cliff, through the woods.

The stone at the top of the cliff was very crumbly, but careful crawling brought me to the edge, within ten or fifteen feet of the raven's nest, where I could look into it easily. At close range it was seen to be carefully built, chiefly of large, dead sticks, and well fitted into the crevice of the cliff. It was warmly lined with willow catkins. Three downy, open-mouthed young ones were crowding each other, in expectation of their next meal, and I secured a good picture of them before descending.

The action of the old birds was always to fly to a distant tree-top to watch me.

By July 14, the young birds were able to fly clumsily from one ledge of the cliff to the next and, later, I saw them taking noisy lessons in woodcraft in the tree-tops of the pine forest near their rocky home.

The Ojibway Indians knew this cliff as Crow Rock and said that the birds had always nested there.

Other families of young and old ravens were seen in the vicinity of similar cliffs on at least two other lakes.

The Raven has long been assumed to nest in Northern Ontario. In this connection, C. W. Nash, in his 'Manual of Vertebrates of Ontario' says "probably breeds in the remote forests towards James Bay." Apparently this is the first published breeding record from Ontario's vast hinterland.

Spinus pinus. PINE SISKIN.—On April 13, 1915, in the early morning, while walking up the ravine of a small creek which flows into the Don River, I noticed a Pine Siskin fly into the top of a small cedar tree. Careful scrutiny of the tree made me believe that there must be a nest, although it could not be seen definitely from the ground. Upon climbing the tree, which was twenty-five to thirty feet high, the nest was found very near

the top and attached to the smaller branches, a short distance out from the main stem of the tree. It was a compact cup, almost spherical below, and was built with twigs as a foundation and the upper part and lining were made of plant fibre. On this date it contained two newly hatched birds and one bird just emerging from the shell. The ground color of this egg was bluish and it was spotted and streaked with dark brown.

I returned to the nesting site on April 23 and the nest had disappeared; perhaps the work of crows, which were numerous. I thought it might have blown down, but could find no trace of it either in the tree or on the ground beneath it.

This nest was located about one mile north of the section of the city known as East Toronto.

On May 20 of the same year, and about a quarter of a mile from the site of this nest, I watched an old Siskin feeding a fully fledged young bird. Their combined notes were something like *whéu-ee*, *whée-you*, *whée-you*, *tuck*, *tuck*, *whéu-ee*, the whole often repeated.

Siskins are reported to have bred in Wellington County, Ontario, in April and May, 1905 (Auk, XXII, 1905, 415), but I believe this is the first nest discovered in this part of the province. As Siskins were seen in this neighborhood quite regularly, from January 28 until May 21, it is probable that several pairs were nesting.

Melospiza melodia melodia. SONG SPARROW.—There is, in my collection, No. 1265, a female Song Sparrow which shows partial albinism. I collected this specimen near Toronto on May 17, 1916. In general appearance it resembles closely a specimen of the Desert Song Sparrow, *Melospiza melodia fallax*, in Mr. J. H. Fleming's collection, with which it was compared. It differs in having the markings uniformly lighter, in having practically white tail-feathers and primaries and in having the beak and feet very light in color.

Song Sparrows were found at Toronto during the present winter, 1916-17.

On December 30, 1916, I found a small flock of half a dozen individuals in the rushes on Ashbridge's Marsh. On January 1, 1917, I found another in a marsh at West Hill, near Toronto.

Piranga erythromelas. SCARLET TANAGER.—In the Don Valley, near Toronto, on May 22, 1915, I took a very peculiar specimen of the Scarlet Tanager. It proved to be a female and its plumage is so odd that I have endeavoured to describe the specimen. Dr. Jonathan Dwight stated, after seeing it, that it was unique, and examination of a large series in Mr. J. H. Fleming's collection showed nothing like it.

It is in my collection, No. 1293.

Ridgway's color standards, 1912, are used in the following description: The under parts are diffused capucine yellow, pinard yellow and buffy olive. The throat, breast and belly are chiefly a mixture of the two yellows, becoming buffy olive on the flanks. The under tail coverts are clear capucine yellow, becoming pinard yellow at the tips. The under wing coverts are white.

The wings and tail are clove brown, edged with citrine above. The upper tail coverts show traces of xanthine orange and the rest of the upper parts are citrine with diffused xanthine orange, becoming bright again on the head.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.—The only records for the Rough-winged Swallow at Toronto are given by J. H. Fleming ('The Auk', Vol. XXIV, p. 82). He has a male, taken at Etobicoke, on May 16, 1900, and found a pair at Black Creek, on June 12, 1906.

On May 21, 1915, to the north of East Toronto, I noticed a pair near a small pond. I obtained a male, No. 1306, and a female, No. 1305, and both are now in my collection.

On May 16, 1916, I found another pair near the same place and collected them. One was a male and the other a female. These two birds were presented to the Provincial Museum, Gould Street, Toronto, and are now in the Museum collection.

As this bird is apparently establishing itself further east on the north shore of Lake Ontario, the relative location of the above records is of interest. Etobicoke is thirteen miles west of the point where my four birds were taken, and Black Creek is nine miles west of the same point.

I might say that I was actively engaged in observing and collecting birds to the east of Toronto where the 1915 and 1916 specimens were taken, during the years 1904–1908, and did much work during 1914, but no Rough-winged Swallows were seen. One must assume that none were present and that they arrived to the east of Toronto, in 1915; thus, these two occurrences are, at the present time, the most easterly recorded for Ontario.

Vermivora peregrina. TENNESSEE WARBLER.—A male Tennessee Warbler in my collection, No. 1340, which I took near Toronto on May 13, 1915, is peculiar in that several feathers of the crown have concealed chestnut brown centres of the same color as those in the crown-patch of the Nashville Warbler (*Vermivora rubricapilla*). Thirty-three specimens in the collection of Mr. J. H. Fleming, taken from most parts of the bird's range, have been examined for similar concealed crown-patches, but none were found. Dr. Jonathan Dwight has pronounced this specimen unique.

Dendroica discolor. PRAIRIE WARBLER.—On May 11, 1916, I found a Prairie Warbler in a small patch of woods that bordered the Scarborough Cliffs at a point a half mile east of the city limits. This specimen, which is a male, is now in my collection, No. 1392. Mr. J. H. Fleming records two previous Toronto records ('The Auk', Vol. XXIV, 84).

Seiurus noveboracensis notabilis. GRINNELL'S WATER-THRUSH.—On May 21, 1915, I took a Water-Thrush at Toronto, which Dr. Jonathan Dwight has identified as this species, although not typical. The specimen is in my collection, No. 1398. Mr. J. H. Fleming in 'The Auk' (Vol. XXV, 486–487) records three previous Ontario specimens.

SOME NOTES ON CONNECTICUT BIRDS.

BY IRA N. GABRIELSON.

DURING 1916, while in Connecticut engaged in work for the Biological Survey, the writer made a number of notes on the birds of the State. These notes have been compared with the data found in the state list¹ and such as seem to be of interest are presented here.

The notes presented are either records of species which are uncommon in the state or unusual dates for common birds. All specimens mentioned are now in the collection of the Biological Survey, unless otherwise specified.

I am indebted to many friends for courtesies received during the season and particularly to those mentioned in the following notes as companions in the field. I wish especially to express my appreciation of the kindness shown to me by Dr. Louis B. Bishop.

1. **Colymbus holboëlli.** HOLBØELL'S GREBE.—Wilbur F. Smith and I saw Holboëll's Grebe on April 15 at Norwalk. This bird was feeding a short distance off shore and the markings were plainly visible through the glasses. Mr. Smith informed me that a live bird of this species was captured and brought to him on April 20 just after I had left Norwalk.

2. **Gavia immer.** LOON.—One observed at Norwalk on October 27 by A. A. Saunders and myself. This seems to be an early date.

3. **Larus argentatus.** HERRING GULL.—No summer records are given in the 'Birds of Connecticut.' Several ornithologists informed me that Herring Gulls were becoming more common and occasionally remained during the summer. I have the following dates for the summer months: Norwalk, May 31, a number over the harbor; Old Lyme, June 12, a flock of considerable size about the mouth of the Connecticut River; Norwalk, July 10, a single bird over the harbor. I left the shore on July 14 and did not return again until after the Gulls became common in fall and consequently cannot say whether any were about during late July or early August.

4. **Larus delawarensis.** RING-BILLED GULL.—On April 11 at Greenwich, Wilbur F. Smith and I saw a number of Gulls in immature plumage which I am positive were Ring-billed Gulls. We watched them at close range for a long time. They were distinctly smaller than the Herring Gulls associated with them and the subterminal black band on

¹ The Birds of Connecticut, by J. H. Sage, L. B. Bishop and W. P. Bliss.

the tail was plainly visible. On April 12 I saw them again over Norfolk Harbor. On September 13 one of these birds was collected on the Housatonic River by Mr. Smith. I saw this specimen at the Bird Craft Sanctuary Museum at Fairfield. Since my return to Washington, Mr. Smith has sent me a second specimen taken by a hunter on the Housatonic River, December 11. This bird has been identified by H. C. Oberholser.

5. **Larus atricilla.** LAUGHING GULL.—Ten were noted along the beach near Stonington on August 21, and a single bird over Norwalk Harbor, August 26. Mr. Smith has specimens collected on the Housatonic River, September 13, 1916.

6. **Sterna hirundo.** COMMON TERN.—Six common Terns were seen and one was collected at the mouth of the Connecticut River on June 12. Others were noted at Norwalk on May 31 and August 26.

7. **Hydrochelidon nigra surinamensis.** BLACK TERN.—A single Black Tern in full spring plumage was seen among the Norwalk Islands on May 24. I watched this bird at short range for some time and later both Mr. Smith and I saw it again. No effort was made to collect the bird as I was at that time unaware of the lack of spring records for the State.

8. **Oceanites oceanicus.** WILSON'S PETREL.—“No specific records of this species” is the statement made regarding the Wilson's Petrel on page 26 of ‘The Birds of Connecticut.’ Since the publication of this work at least two specimens have been taken. Mr. Wilbur F. Smith collected one on August 7, 1914, off Norwalk Harbor. I am informed that this specimen is now in the collection of the Connecticut Commissioners of Fisheries and Game. I accompanied Mr. Smith to the same locality on June 30, 1916, and secured a second specimen.

9. **Oidemia americana.** SCOTER.—On April 17, Mr. Smith and I saw about twenty of this species among the Norwalk Islands feeding with a large flock of White-winged Scoters. The birds were observed at short range and I am positive of the identification.

10. **Branta canadensis canadensis.** CANADA GOOSE.—A flock of about two hundred were seen at Greenwich on April 11. Mr. Smith informed me that the flock wintered at this place. At this time they were very tame and only swam slowly away as we approached.

11. **Ixobrychus exilis.** LEAST BITTERN.—Mr. Smith and I saw one in the marshes at the mouth of the Housatonic River on June 28. Two were seen at South Windsor on July 16 and one on August 1. C. W. Vibert who was with me stated that they had been there for some time.

12. **Porzana carolina.** SORA.—Additional spring records. I flushed one out of a small swamp at South Windsor on May 8. Also flushed a bird at Norwalk on May 24.

Summer records. At South Windsor, July 15 and Glastonbury July 28 birds were seen. In addition the familiar cry of this species was often heard during the evenings in the extensive marshy hay lands about these two places. It is probable that they still breed here.

13. **Tringa canutus.** KNOT.—On May 24 Mr. Smith and I spent

about an hour among the Norwalk Islands looking over a great flock of migrating shorebirds. While we were watching a flock of small Sandpipers a Knot alighted within thirty yards and remained as long as we cared to look at it.

14. ***Pisobia fuscicollis***. WHITE-RUMPED SANDPIPER.—Two were noted in the flock of shorebirds on the Norwalk Islands, May 24.

15. ***Bartramia longicauda***. UPLAND PLOVER.—C. W. Vibert, of South Windsor, informed me that a pair of Upland Plover regularly spent the summer on the meadows near his home. He conducted me to the place on May 8 and we saw one bird. On July 15 two were noted in the same locality.

16. ***Oxyechus vociferus***. KILLDEER.—I saw the Killdeer on the following dates: Norwalk, April 13, May 20, August 24 and 25 and October 27; South Windsor, May 8, July 16, and August 1; Fairfield, October 2. On August 24 four were seen feeding in a pasture near the salt marshes and on August 25 ten at the same spot. The other records were of single birds or pairs.

17. ***Arenaria interpres morinella***. RUDDY TURNSTONE.—A number of Turnstones were present in the flock on the Norwalk Islands on May 24. On May 31 one individual was noted feeding along the shore of Norwalk Harbor. This bird was very tame and allowed me to approach within ten yards before it flew.

18. ***Haliaeetus leucocephalus leucocephalus***. BALD EAGLE.—One noted flying over Fourteen Acre Pond at Norwalk on May 20 and a second seen feeding on dead fish along the edge of the same pond on September 26.

19. ***Pandion haliaëtus carolinensis***. OSPREY.—Mr. Arthur W. Brockway and I saw two occupied nests at the mouth of the Connecticut River on June 12.

20. ***Melanerpes erythrocephalus***. RED-HEADED WOODPECKER.—One taken May 12 at Norwalk.

21. ***Empidonax virescens***. ACADIAN FLYCATCHER.—A pair of these small flycatchers were observed daily about a little swamp at Norwalk from May 15 to 18. On the 18th one was collected for identification. Others were noted at the same place on May 20.

22. ***Otocoris alpestris alpestris***. HORNED LARK.—Early record: one, collected out of a flock of three on October 27 at Norwalk, was too badly shot to make a skin.

23. ***Hesperiphona vespertina vespertina***. EVENING GROSBEAK.—On May 3 Lewis W. Ripley of Glastonbury informed me that he had seen a flock of Evening Grosbeaks in a small swamp near East Hartford. I accompanied him to this place on May 4 and found a flock of about fifteen birds three of which were collected. I saw birds of this same flock on May 5 and a single bird in a nearby swamp on May 8.

24. ***Zonotrichia leucophrys leucophrys***. WHITE-CROWNED SPARROW.—One collected from a flock of English Sparrows in a barnyard near

Hartford on May 4. This specimen is in the Athenæum collection at Hartford. A single bird was noted at West Hartford, on May 7; and another at Norwalk May 15.

25. **Melospiza lincolni lincolni.** LINCOLN'S SPARROW.— One taken at South Windsor on May 8.

26. **Iridoprocne bicolor.** TREE SWALLOW.— Summer record: two noted by Mr. Brockway and myself at Old Lyme on June 12.

27. **Riparia riparia.** BANK SWALLOW.— Early record: one taken on April 18 at Norwalk out of a flock of Barn and Tree Swallows.

28. **Lanius ludovicianus migrans.** MIGRANT SHRIKE.— I saw one at Norwalk on October 2 and a second at the same place on October 27. (With A. A. Saunders.)

29. **Mniotilta varia.** BLACK AND WHITE WARBLER.— Early record: one recorded by A. A. Saunders and myself April 21 at New Haven.

30. **Helmitheros vermivorus.** WORM-EATING WARBLER.— One taken at Norwalk on May 15. Others noted at Norwalk on May 20 and August 25 and one at Hadlyme June 11.

31. **Vermivora peregrina.** TENNESSEE WARBLER.— One individual noted on each of the following dates: Norwalk, May 12, 21 and 26; Wilton, May 20.

32. **Dendroica tigrina.** CAPE MAY WARBLER.— A. G. Powers and I saw eight Cape May Warblers in Hartford on May 7. I saw four and collected two while tramping with Mr. Vibert at South Windsor on May 8. One noted at Norwalk May 16.

33. **Dendroica coronata.** MYRTLE WARBLER.— Late spring record: May 24 at Norwalk.

34. **Dendroica castanea.** BAY-BREASTED WARBLER.— The Bay-breasted Warbler was very common from May 19 to May 21 in Norwalk and vicinity. There were numbers of them again on May 26-27, although they were not so abundant as on the previous dates.

Earliest record for the season, May 8 at South Windsor (with C. W. Vibert).

35. **Dendroica vigorsii.** PINE WARBLER.— Norwalk April 14 and 15; New Haven April 21; South Windsor July 16 (with C. W. Vibert).

36. **Wilsonia citrina.** HOODED WARBLER.— At Wilton on May 27 I saw a number of singing males and collected one. Mr. Godfrey who was with me at the time stated that they bred regularly there. At Hadlyme on June 11 Mr. Arthur W. Brockway took me to see two nests of this species which he had previously found.

37. **Wilsonia canadensis.** CANADA WARBLER.— On June 10 when I reached Hadlyme, Mr. Brockway informed me that he had taken the nest and eggs of the Canada Warbler the previous day. On June 11 we visited the spot where he had taken the nest and found the pair still about.

38. **Thryothorus ludovicianus ludovicianus.** CAROLINA WREN.— A Carolina Wren appeared in the yard of St. Paul's Church, at Norwalk, on September 26 and was noted daily until October 7.

39. **Cistothorus stellaris.** SHORT-BILLED MARSH WREN.—One taken at South Windsor May 6. Others were noted at South Windsor on July 15–16 and August 1. C. W. Vibert informed me that this little colony had been there for several years.

40. **Sitta canadensis.** RED-BREASTED NUTHATCH.—Late record: one female taken at Norwalk, on May 15.

41. **Vermivora lawrencei.** LAWRENCE'S WARBLER.—On May 20 I went on a trip to Wilton with the Norwalk Bird Club. Mr. Smith and Mr. Hall found a Lawrence's Warbler and called the rest of us to see it. The bird was very tame and remained in some low bushes for some time while the entire party gathered about to watch it.

42. **Vermivora leucobronchialis.** BREWSTER'S WARBLER.—One seen in Norwalk in some bushes by the roadside on May 26.

NOTES ON NORTH AMERICAN BIRDS.

III.

BY HARRY C. OBERHOLSER.

THIS article is a continuation of the author's remarks on various North American birds.¹ In the following pages there are notes on two genera, one species, and two subspecies. For the loan of certain specimens used, the writer is indebted to Dr. L. C. Sanford.

Bannermania Mathews and Iredale.

The genus *Bannermania* has recently been proposed² as a monotypic group for the reception of *Oceanodroma hornbyi* (Gray).³ Examination of recently collected material of this species has offered

¹ For the preceding papers of this series, see 'The Auk,' XXXIV, April, 1917, pp. 191–196; and XXXIV, July, 1917, pp. 321–329.

² Mathews and Iredale, *Ibis*, ser. 10, III, No. 3, July, 1915, p. 578.

³ *Thalassidroma Hornbyi* Gray, *Proc. Zool. Soc. Lond.*, 1853 (July 25, 1854), p. 62 (north-west coast of America).

an opportunity to determine the validity of the characters adduced for this separation. In the type specimen the wing formula is said by Messrs. Mathews and Iredale to differ from that of the other species of *Oceanodroma* in having the first (outermost) primary equal to the third, and much longer than the fourth. In one specimen we have examined, the first primary is very much shorter than the third and also decidedly shorter than the fourth. A similar discrepancy in the relative length of the primaries occurs in other species of *Oceanodroma*, such as *Oceanodroma furcata* and *Oceanodroma leucorhoa*, in which species the first is sometimes longer, occasionally shorter, than the fourth. From these facts we must conclude that the proportion of the primaries in birds of this group is of no value as a generic character. The tarsus in *Oceanodroma hornbyi* is almost exactly equal to the middle toe with claw, and is thus of the same proportions as in *Oceanodroma leucorhoa*. The wings and tail are like those of *Oceanodroma leucorhoa*, and some of the tail-feathers are slightly scalloped at their tips, as is not infrequently the case in *Oceanodroma leucorhoa*, and commonly and most noticeably so in *Oceanodroma furcata*. The bill seems to be rather slender and relatively long, but in this respect it is practically equalled by some specimens of *Oceanodroma leucorhoa* and other species. In coloration this species is very different from all the other forms of the genus *Oceanodroma*, but since it seems to possess no peculiar trenchant structural characters, its generic separation on the ground of coloration alone seems to be unwarranted, and its name should, therefore, remain *Oceanodroma hornbyi*.

This species is at present relegated to the hypothetical list of North American birds, on the ground that the alleged locality, "northwest coast of America," is doubtful. Since, however, it is known that Admiral Hornby, who obtained the type specimen during the period of his command on the Pacific Station, had his headquarters on Vancouver Island, British Columbia, there seems to be no reasonable doubt of the correctness of the locality. In view of these facts, the species should be restored to a place in the regular list of North American birds.

Cymochorea Coues.

The subgenus *Cymochorea* Coues¹ has recently been raised to generic rank to include all the species now under *Oceanodroma* Reichenbach, except the type of the latter, *Oceanodroma furcata* (Gmelin).² A careful examination of the species of *Oceanodroma* discloses the fact that there is no structural distinction between *Oceanodroma furcata* and the other species of the genus, with exception of the slightly scalloped tips of the rectrices and the rather narrower ends of the outer pair. Furthermore, these peculiarities are indicated in some specimens of *Oceanodroma leucorhoa* and *Oceanodroma hornbyi*, though never developed to so great a degree as in *Oceanodroma furcata*. Moreover, the difference in color between *Oceanodroma furcata* and the remaining species now included in the group is scarcely deserving of weight in generic separation, in view of the fact that species of such diverse coloration as members of the genus *Puffinus* and its closely allied groups have been by previous authors, as well as by Messrs. Mathews and Iredale, and we think properly, placed in the same genus. In this particular case it seems to us that neither the slight and not wholly constant structural character of the rectrices, nor the somewhat different coloration is sufficiently important to entitle *Cymochorea* Coues to generic rank; and it, therefore, should remain, as at present, a subgenus of *Oceanodroma*.

Sula dactylatra californica Rothschild.

This new subspecies was recently described by Dr. Walter Rothschild³ from San Benedicto Island, in the Revillagigedo group, off the coast of western Mexico. Its geographic range was given by the original describer as the "coasts of California and Central America," but without any definite localities outside the Revillagigedo Islands. Since, therefore, there is no evidence that this new race has ever been taken in either California or Lower Cali-

¹ *Cymochorea* Coues, Proc. Acad. Nat. Sci. Phila., 1864, p. 75 (type by original designation, *Procellaria leucorhoa* Vieillot).

² Cf. Mathews and Iredale, *Ibis*, ser. 10, III, No. 3, July, 1915, pp. 574-581.

³ Bull. Brit. Ornith. Club, XXXV, No. CCIII, January 27, 1915, p. 43.

ifornia, we must, notwithstanding the implication contained in the subspecific term "*californica*," exclude it from the list of North American birds.

***Fregata aquila* Linnæus.**

The name *Fregata aquila* Linnæus,¹ under which the frigate bird of North America has heretofore passed, now proves to be applicable only to the bird of Ascension Island in the South Atlantic Ocean.² The bird of the West Indies, and therefore of the southeastern United States, thus left without a name, Mr. Mathews proposed to call *Fregata minor minor* Gmelin,³ by fixing the type locality of the latter as the West Indies.⁴ Dr. Walter Rothschild has shown, however, that the type locality of *Pelecanus minor* Gmelin is undoubtedly in the Eastern Hemisphere, and he has restricted it to the eastern half of the Indian Ocean.⁵

For the West Indian bird Dr. Rothschild uses the name *Fregata magnificens* Mathews, which he considers a species distinct from *Fregata minor* Gmelin, although originally described as a subspecies of the latter.⁶ Mr. Mathews, however, still maintaining the West Indian bird to be different from *Fregata magnificens magnificens* of the Galapagos Islands, called it provisionally *Fregata minor rothschildi*, so that in case Dr. Rothschild should prove to be correct in the shifting of the type locality from the West Indies to the Indian Ocean, the West Indian bird would be provided with a name.⁷ All the specimens of *Fregata* that the present writer has been able to examine from the West Indies are undoubtedly specifically identical with *Fregata magnificens* Mathews, and are likewise specifically distinct from *Fregata minor* Gmelin. Mr. Mathews

¹ *Pelecanus aquilus* Linnæus, Syst. Nat., ed. 10, I, 1758, p. 133.

² Mathews, Austral Avian Record, II, No. 6, December 19, 1914, pp. 117-118; Rothschild, Novit. Zool., XXII, February 12, 1915, pp. 145-146.

³ *Pelecanus minor* Gmelin, Syst. Nat., I, ii, 1789, p. 572.

⁴ Austral Avian Record, II, No. 6, December 19, 1914, p. 118; Birds Australia, IV, part 3, June 23, 1915, pp. 240-281.

⁵ Novit. Zool., XXII, February 12, 1915, p. 145.

⁶ *Fregata minor magnificens* Mathews, Austral Avian Record, II, No. 6, December 19, 1914, p. 120 (Barrington, Indefatigable, and Albemarle islands, Galapagos Islands); Birds Australia, IV, part 3, June 23, 1915, p. 269 (type said to be from Culpepper Island, Galapagos Islands).

⁷ *Fregata minor rothschildi* Mathews, Birds Australia, IV, part 3, June 23, 1915, p. 280 (Aruba Island, Caribbean Sea).

is, however, correct in saying that the West Indian birds differ from *Fregata magnificens* of the Galapagos Islands, since they average much smaller, particularly in length of wings and tail; but this difference is clearly not specific, as the extreme measurements overlap in the two forms. The possibility that there are really two distinct species in the West Indies is suggested by Mr. Mathews' remarks and his contention that the West Indian bird is a subspecies of *Fregata minor*; but, until this be proved, the bird of the West Indies, Caribbean Sea, the Gulf of Mexico, and the coasts of the southeastern United States must be called *Fregata magnificens rothschildi* Mathews.

The frigate bird of the central Pacific Ocean has recently been separated from that of the Indian Ocean by Mr. Mathews¹ as *Fregata minor palmerstoni* (Gmelin).² Birds from the coasts of California and Lower California belong clearly to this race, which we therefore should add to our North American list.

Thus, for North America, we shall have two species, instead of the single *Fregata aquila* Linnæus: an Atlantic form, *Fregata magnificens rothschildi* Mathews, and a Pacific bird, *Fregata minor palmerstoni* (Gmelin).

***Bubo virginianus wapacuthu* (Gmelin).**

The name *Strix wapacuthu* Gmelin³ was some time ago employed by the writer⁴ for the Arctic Horned Owl, *Bubo arcticus* Swainson. Subsequently Mr. William Brewster questioned this identification,⁵ and referred this name as a synonym to *Nyctea nyctea*. Mr. Ridgway has recently⁶ again revived *Bubo virginianus wapacuthu* (Gmelin), and used it for the Arctic Horned Owl in place of *Bubo virginianus subarcticus* Hoy, or *Bubo virginianus arcticus* Swainson,

¹ Austral Avian Record, II, No. 6, December 19, 1914, p. 119; Birds Australia, IV, part 3, June 23, 1915, p. 280.

² *Pelecanus Palmerstoni* Gmelin, Syst. Nat., I, ii, 1789, p. 573 (Palmerston Island, Pacific Ocean).

³ Syst. Nat., I, i, 1788, p. 291 (Hudson Bay).

⁴ Proc. U. S. Nat. Mus., XXVII, 1904, pp. 191-192.

⁵ Mem. Nutt. Orn. Club, IV, 1906, p. 205.

⁶ Bull. U. S. Nat. Mus., No. 50, part VI, April 8, 1914, p. 751.

which latter Dr. C. W. Richmond had shown to be preoccupied.¹ In view of this recent action of Mr. Ridgway's, the writer has taken pains to go over the matter again; and the result of this investigation seems fully to substantiate Mr. Brewster's position. The name *Strix wapacuthu* Gmelin was based on the "wapacuthu owl" of Pennant,² hence the identification of his description must determine the identity of Gmelin's name. While Pennant's description superficially suggests the Arctic form of *Bubo virginianus*, a careful reading shows that the bird described must be the Snowy Owl, *Nyctea nyctea*. In addition to other details, including the fact that Pennant's bird is specifically said to be without ears, the statements that the bill is glossy black, and that the "space between the eyes, cheeks, and throat" is "white; the ends of the feathers on the head black," clearly show that the description could not apply to any form of *Bubo virginianus*, but must refer to *Nyctea nyctea*. In view of this, the proper name for the Arctic Great Horned Owl should remain *Bubo virginianus subarcticus* Hoy.

¹ Proc. Biol. Soc. Wash., XV, 1902, p. 86.

² Arctic Zool., II, 1785, p. 231.

NOTES ON THE GENUS PUFFINUS BRISSON.

BY HARRY C. OBERHOLSER.

THE genus *Puffinus* Brisson, as currently recognized, has recently been separated by Messrs. Mathews and Iredale into a number of generic groups.¹ The present writer, in connection with other work on the Biological Survey collection, in the United States National Museum, has had occasion to investigate the generic status of the various shearwaters of the genus *Puffinus*, consequently to review the classification adopted by Messrs. Mathews and Iredale; and the results of this study may be worth placing on record, particularly in so far as they affect the species found in North America.

The new genus *Calonectris*,² proposed for *Puffinus leucomelas* Temminck and *Puffinus kuhlii* Boie, appears to be well characterized by its large, robust bill, prominent nasal tubes, rather stout and somewhat abbreviated tarsi.

The genus *Ardenna* Reichenbach,³ revived to include *Puffinus gravis* (O'Reilly) and *Puffinus creatopus* Coues, seems to be sufficiently different from true *Puffinus*, by reason of its more prominent nostrils and relatively, as well as actually, larger and heavier dertrum.

The proposed genus *Hemipuffinus*,⁴ with its relatively short, heavy bill and prominent nostrils, looks very different from the typical species of *Ardenna*, but is so intimately connected with *Ardenna gravis* by individual variation of *Ardenna creatopus* that the difference between the two supposed groups is thus completely bridged; and *Hemipuffinus*, with its single species, must be merged with *Ardenna*. It may, however, be retained as a subgeneric group.

The genus *Thyellodroma* Stejneger,⁵ revived by Mathews and

¹ Austral Avian Record, II, 1913-1914, pp. 12, 20, 110; Ibis, ser. 10, III, No. 3, July, 1915, pp. 582-604.

² Mathews and Iredale, Ibis, ser. 10, III, No. 3, July, 1915, p. 586 (type by designation [p. 592], *Puffinus leucomelas* Temminck).

³ Natürl. Syst. Vögel, 1852, p. IV (type by monotypy, *Procellaria major* Faber, = *Procellaria gravis* O'Reilly).

⁴ Iredale, Austral Avian Record, II, No. 1, August 2, 1913, p. 20 (type, by original designation, *Puffinus carneipes* Gould).

⁵ Proc. U. S. Nat. Mus., XI, November 8, 1888, p. 93 (type by original designation, *Puffinus sphenurus* Gould).

Iredale for *Puffinus cuneatus* Salvin, *Puffinus bulleri* Salvin, and *Puffinus chlororhynchus* Lesson, is, by reason of its long, wedge-shaped tail and heavy, anteriorly more truncate nasal tubes, held by us to be sufficiently distinct from typical *Puffinus*.

The genus *Alphapuffinus* was proposed for *Puffinus assimilis* by Mr. Mathews,¹ and later extended to include also *Puffinus lherminieri* Lesson, and *Puffinus persicus* Hume. The characters given for this separation were the slenderer bill and more open nostril of *Alphapuffinus*. Examination of the species thus included and comparison with the species of true *Puffinus* show that these differences are merely individual variations, and do not form a basis for even subgeneric division. It is necessary, therefore, to synonymize *Alphapuffinus* Mathews with *Puffinus* Brisson.

The case of *Neonectris* Mathews² is a little different from that of *Alphapuffinus*. Messrs. Mathews and Iredale included in this group *Puffinus tenuirostris tenuirostris* (Temminck), *Puffinus tenuirostris brevipennis* Gould, and *Puffinus griseus* (Gmelin). Of these forms, *Puffinus tenuirostris brevipennis* is most different from *Puffinus puffinus*, the type of the genus *Puffinus* Brisson, and at first sight seems to be well differentiated generically; but by individual variation it intergrades completely through *Puffinus tenuirostris tenuirostris* and *Puffinus griseus*; in fact, some specimens of *Puffinus griseus*, in so far as their structural characters are concerned, might be placed either in the *Puffinus tenuirostris brevipennis* group or with *Puffinus puffinus*. In view of these facts it is quite impossible to recognize the genus *Neonectris* as distinct from *Puffinus*. Indeed, it is unsatisfactory as even a subgeneric division.

***Puffinus couesi* Mathews.**

In the treatment of the genus *Puffinus* in Mathews' 'Birds of Australia,' there is an extended discussion of the nomenclature and relationships of *Puffinus opisthomelas* Coues and *Puffinus auricularis* Townsend.³ The author, from studying the original

¹ Austral Avian Record, II, No. 5, September 24, 1914, p. 110 (type by original designation and monotypy, *Puffinus assimilis* Gould).

² Austral Avian Record, II, No. 1, August 2, 1913, p. 12 (type by original designation, *Puffinus brevipennis* Gould).

³ Mathews, Birds Australia, II, part 1, May 30, 1912, pp. 65-67.

descriptions of these two species, apparently without examining the type of either, comes to the conclusion that *Puffinus auricularis* and *Puffinus opisthomelas* are identical and that both refer to the bird from the Revillagigedo Islands, Mexico (*Puffinus auricularis* Townsend). He therefore renames the *Puffinus opisthomelas* of Coues and subsequent authors, with the following basis: "the species described but not figured in the *Monograph of the Petrels* (pp. 109 *et. seq.*) under the name of *Puffinus opisthomelas* Coues, and of which Anthony (*Auk*, Vol. XVII, p. 247, 1900) notes: 'extremely plentiful off the coast of California during the summer months, breeding rather commonly on Guadaloupe [sic], San Benito Islands, and Natividad Island.'"

An examination, however, of the types of *Puffinus opisthomelas* Coues¹ and *Puffinus auricularis* Townsend,² as well as a comparison of both with material from Monterey, other parts of California, and from Lower California, at once discloses the fact that these types clearly represent the two distinct species with which current authors have identified them, and that, furthermore, these types typify the characters of the two species. The bird from Clarion Island, Revillagigedo Islands, western Mexico, *Puffinus auricularis* Townsend, differs from *Puffinus opisthomelas* Coues in its much more blackish upper surface, shorter, more blackish bill, smaller feet, and usually pure white axillars. The figure of *Puffinus opisthomelas* in Godman's '*Monograph of the Petrels*'³ does not represent a typical California bird, yet a specimen in the United States National Museum from Monterey Bay, California (No. 191015, U. S. N. M.), very closely matches it in color. While this specimen is unusually dark, there is much individual variation in the coloration of the upper parts, and the type of *Puffinus opisthomelas* Coues, possibly in part on account of its age, is the palest specimen of our series! It is thus very evident that *Puffinus couesi* Mathews becomes a synonym of *Puffinus opisthomelas* Coues, and that the latter name remains the proper designation of this species. Also the name *Puffinus auricularis* Townsend must be continued for the species to which it has always been applied.

¹ *Puffinus opisthomelas* Coues, Proc. Acad. Nat. Sci. Phila., 1864, p. 139 (Cape San Lucas, Lower California).

² *Puffinus auricularis* Townsend, Proc. U. S. Nat. Mus., XIII, Sept. 9, 1890, p. 133 (Clarion Island, Revillagigedo Islands, Colima, Mexico).

³ Godman, *Monograph Petrels*, part 2, March, 1908, pl. 30.

***Puffinus cuneatus* Salvin.**

Mr. G. M. Mathews, in his 'Birds of Australia',¹ considered *Puffinus cuneatus* Salvin a subspecies of *Puffinus chlororhynchus* Lesson, or, as he calls it, *Puffinus pacificus* (Gmelin). He also described a bird from San Benedicto Island, Revillagigedo Islands, State of Colima, Mexico, as *Puffinus pacificus alleni*,² which Dr. Witmer Stone entered in the first annual list of proposed changes in the A. O. U. Check-List of North American Birds as a substitute for the *Puffinus cuneatus* of North America. More recently Messrs. Mathews and Iredale have reverted to the previous view of authors that *Puffinus cuneatus*, the white-breasted bird, and *Puffinus chlororhynchus* (*Puffinus pacificus* [Gmelin]), the dark-bodied bird, are distinct species, instead of mere color phases or geographic races. This view is probably correct, although this difficult question is by no means finally settled. Such an arrangement leaves, according to Mathews and Iredale, only two described subspecies under *Puffinus cuneatus*, viz.: *Puffinus cuneatus cuneatus* Salvin, from the Marshall, Bonin, and Pescadores Islands, and *Puffinus cuneatus laysani* Mathews from Laysan Island in the Hawaiian group. On San Benedicto Island off the western coast of Mexico occur both light and dark birds, and the *Puffinus pacificus alleni* of Mathews belongs to the dark species, *Puffinus pacificus*; while the light bird of this island, if subspecifically distinct from that of the Hawaiian Islands, is apparently unnamed.

Mr. Mathews, in describing his *Puffinus pacificus laysani*,³ from Laysan Island, Hawaiian Islands, based his distinction on the lighter color of the Laysan birds compared with the typical form from the Marshall Islands. Later Messrs. Mathews and Iredale asserted the absolute identity of birds from Bonin Island with the type of *Puffinus cuneatus* Salvin from Krusenstern Island in the Marshall archipelago.⁴ Although the writer has not been able to examine specimens from the Marshall Islands, he has had available birds from the Bonin Islands, and a good series from both Laysan Island and other Hawaiian Islands, including the type of *Puffinus*

¹ Birds Australia, II, part 1, May 30, 1912, pp. 82-84.

² Birds Australia, II, part 1, May 30, 1912, p. 83.

³ Birds Australia, II, part 1, May 30, 1912, p. 83.

⁴ Ibis, ser. 10, III, No. 3, July, 1915, pp. 597-599.

knudseni Stejneger.¹ A careful comparison of this material reveals no characters for the recognition of a subspecies from the Hawaiian Islands or from Laysan, since the chief difference mentioned by Mr. Mathews as characterizing his *Puffinus pacificus laysani*, its paler upper parts, is not at all borne out by the present specimens, some of the examples from Laysan and the other Hawaiian Islands being much darker than the Bonin Islands bird. Furthermore, there is absolutely no difference between the light-breasted *Puffinus pacificus laysani*, described by Mr. Mathews from Laysan Island, and *Puffinus knudseni* Stejneger, from Kauai Island; hence, were the Hawaiian bird subspecifically distinguishable, it should bear the name *Puffinus cuneatus knudseni* Stejneger. The identity, however, of the Hawaiian Islands bird with true *Puffinus cuneatus* leaves the bird occurring in North America without a distinctive subspecific name, and we must, therefore, revert for its technical designation to *Puffinus cuneatus*; or, rather, since this species is generically different from the typical species of the genus *Puffinus* Brisson, we should call it *Thyellodroma cuneata* (Salvin).

In view of the changes indicated in the present paper, the North American species now included in the genus *Puffinus* will stand as follows:

Calonectris kuhlii borealis (Cory).

Ardenna carneipes (Gould).

Ardenna creatopus (Coues).

Ardenna gravis (O'Reilly).

Thyellodroma cuneata (Salvin).

Thyellodroma bulleri (Salvin).

Puffinus tenuirostris tenuirostris (Temminck).

Puffinus griseus chilensis Bonaparte.

Puffinus griseus stricklandi Ridgway.

Puffinus puffinus puffinus (Brünnich).

Puffinus puffinus bermudæ Nichols and Mobray.

Puffinus opisthomelas Coues.

Puffinus auricularis Townsend.

Puffinus lherminieri lherminieri Lesson.

Puffinus assimilis baroli Bonaparte.

¹ *Puffinus knudseni* Stejneger, Proc. U. S. Nat. Mus., XI, November 8, 1888, p. 93 (Kauai Island, Hawaiian Islands).

GENERAL NOTES.

Man-o'-War-bird etc. on the North Carolina Coast.—I have a letter from Mr. Russell J. Coles at the Bight of Cape Lookout, North Carolina, dated July 19, 1917, enclosing excellent photographs of a juvenile Man-o'-War-bird (*Fregata aquila*) in which he says: "On July 10, I and members of my crew watched for some time a Man-o'-War-bird attempting to fly against a heavy wind squall. The bird appeared very much exhausted as it came in from the sea against the wind. . . . At last, one of my crew struck at it and in dodging the blow, the bird fell in the sea alongside and was lifted into the boat. I kept it on board for half a day and, although at first it was too weak to show the usual aggressive spirit of its species, yet when rested it become very pugnacious and struck at all who approached it with beak and wings.

"Finally I released it after measuring and photographing, and it flew swiftly away to the south. From tip to tip of wings, it measured 7 ft. 4 in. which was wider than examples I have measured on Gulf coast of Florida. This is my first observation of this species as far north as this, and native fishermen do not recall having seen one here before.

"During the past five weeks, I have seen three flocks of Brown Pelicans [*Pelecanus occidentalis*] here, one a flock of twelve rested on the water just off point of Cape Lookout for thirty minutes on June 15."

Under date of July 27, Mr. Coles writes again from the same locality:

"Since my last letter to you, I have seen one small flock of eight, and one of nine Brown Pelicans; both flocks flying south. Then one lone Pelican remained half a day near my boat feeding in the Bight. Ten years ago, I saw only one Least Tern or "Striker" [*Sterna minima*] on about August 1st. Since then their numbers have increased each year, and I can now see 20 or 30 in a day."

The Man-o'-War-bird is a stray on the North Carolina coast, and the status there of Pelican and Least Tern is of interest.—J. T. NICHOLS, *New York, N. Y.*

Gadwall in Massachusetts.—Mr. Harry P. Sturtevant reports the capture at Nipponick Pond, Bridgewater, Massachusetts, upon October 11, 1916, of two Gadwalls (*Chaulelasmus streperus*).—ARTHUR C. DYKE, *Bridgewater, Mass.*

Bittern (*Botaurus lentiginos*) in a Phenomenal Position at Boston, Mass.—Upon entering the Public Garden about seven A. M. on March 25, 1917, while my eyes were turned in a somewhat different direction, I was conscious of a large bird rising from a grass plot at my right. This bird by a flight of about two hundred feet alighted in a large cottonwood tree which stands beside the pond within the Garden, taking a perch

forty feet or thereabouts above the ground. There it remained for full observation, assuming the statuesque attitude peculiar to the Bittern, neck, head, and bill in a straight line pointing up into the sky, and remaining motionless. Relying on its sense of self-concealment in such an attitude when in a marsh or swamp, this bird in the tree placed its reliance, as is its wont, on maintaining this attitude, and did so throughout the day. I remained in the Garden until 8.30, and when I came away the bird had changed neither position nor attitude from those assumed when it took its perch. Other observers' attention was called to this phenomenon, as I met them. And during both forenoon and afternoon friends, to whom I mentioned the occurrence at the breakfast table and who later visited the Garden, found the bird in the same position and attitude at different hours of the day. It was not concerned or disturbed upon observers' near approach to the tree or even standing directly under it, and as the tree is beside one of the principal paths of the Garden, there were passersby throughout the day. The Bittern took advantage of night, doubtlessly, to seek a more congenial location, for it was not present the following morning.

The date of this occurrence was by six days earlier than the earliest record of Bittern in Howe and Allen's 'Birds of Massachusetts,' which is March 31, 1894, when Dr. Walter Faxon observed one in the Cambridge Region (Brewster). The conditions were still wintry, although the breaking up had extended well toward the first springlike stage which really appeared two days later, when the ice was mostly gone from the pond and the earth had loosened from the grip of frost. As to the perch in the tree taken and maintained with full assurance of self-concealment, life-long ornithologists here, such as Mr. William Brewster and Dr. Charles W. Townsend, state that they have never seen a Bittern perching in a tree or bush. Dr. Townsend, however, writes me, "One day last summer at Ipswich in a rain storm I saw a Bittern standing on top of a small haystack near my house. He presented a curious and unusual appearance, and I made a note of it." And Mr. Chapman in his 'Handbook of Birds of Eastern North America,' p. 220, in comparing herons and bitterns states, "Herons perch and usually nest in trees; Bitterns rarely or never do." It is presumable, therefore, that the occurrence of Bittern perching in a tree may have been previously noted by observers, but, perhaps, such an occurrence as this bird in the Public Garden perching throughout the day and remaining for hours undisturbed and unconcerned in its typical statuesque attitude is unprecedented.—HORACE W. WRIGHT, *Boston, Mass.*

Golden Eagle (*Aquila chrysaëtos*) at Springfield, Mass.—On the twentieth of last February a female Golden Eagle was taken in Somers, Connecticut, about ten miles from here. This specimen is now in the Museum of Natural History, in Springfield.

During the last fifty years there is only one previous record of the occurrence of this species in this vicinity.—ROBERT O. MORRIS, *Springfield, Mass.*

Sparrow Hawks Nesting in a Bird House.— A pair of Sparrow Hawks have nested in a sort of a pigeon house that was built by a man on my place and fastened on top of a pole about 18 feet from the ground and placed in the middle of the chicken yard. It somewhat resembles a martin house, though the holes are larger. Of course, they have the house to themselves. It is located within 200 feet of a Martin house occupied by a large colony of these birds which are continually worrying the hawks when they return with food for the young. A week ago when I looked in the box there were three or four young ones covered with white down.— WM. H. BROWNING, *New York, N. Y.*

Black Vulture in Massachusetts.— A female Black Vulture (*Catharista urubu*) was shot by Archer L. Pierce, Aug. 20, 1917, on the Burnham estate at the west end of Wenham, Mass. The bird was eating from a garbage pail at the time. The specimen has been sent to the Boston Society of Natural History.— JOHN C. PHILLIPS, *Wenham, Mass.*

Crow Roost near Boston, Pennsylvania.— For more than fifteen years there has been a large crow roost in the hilltops adjoining the borough of Boston, Pa. Recently a few hunters with shot guns have compelled the Crows to change their roost a distance of one fourth of a mile north to the hilltops of "Deadman's Hollow" which brings it within about half a mile of the city limits of McKeesport.

The writer succeeded in making a fair estimate of the number of birds gathering at the roost. Acres of trees blackened by masses of noisy crows is the usual impression that one gets from a visit to the winter night rendezvous. On March 10, 1916, the crows were driven out of the woods as they were gathering to roost whereupon they settled down over about 100 acres of snow covered fields. There they were visible and estimating one crow to every 200 square feet, a very low safe estimate, an approximate number of 20,000 crows was the result.

The ground covered and other factors entering into the estimate depends upon the writer's judgment as a civil engineer and surveyor.

This year while taking our Christmas bird census for 'Bird-Lore' 1,500 crows were counted flying overhead down the Youghiogheny River to the roost. The vast bulk of the crows came from the other directions and the 1,500 counted represent but a small percentage of the total number of crows.— THOS. L. MCCONNELL, *McKeesport, Pa.*

Evening Grosbeak (*Hesperiphona vespertina vespertina*) at Springfield, Mass.— For the last few years the Evening Grosbeak appears to be a regular winter visitor to this region. If this bird is to continue to appear here during the colder months, it will be interesting to know when its coming and going may be expected. Last season in central Massachusetts

its presence was first noted early in October, and the last one reported as seen here was upon May 18.—ROBERT O. MORRIS, *Springfield, Mass.*

Evening Grosbeak at Lakewood, N. J.—I am able to add a small item to the record of the Evening Grosbeak in New Jersey.¹ At Lakewood, on the morning of March 21, 1917, near the corner of Forest Avenue and Second Street, I found a flock of about a dozen birds some of which were on the ground, feeding, others resting in bushes and small deciduous trees. They were gone before I could make sure whether any males were amongst them.

These are the only Evening Grosbeaks I have ever seen at Lakewood, where I have passed several weeks or several months during most of the winter seasons for twenty years.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

Evening Grosbeaks at Hatley, Stanstead County, Quebec.—Since my previous note on the winter birds (Auk, Vol. XXXIV, 1917, No. 2, p. 217) Evening Grosbeaks (*Hesperiphona vespertina vespertina*) I am pleased to say have paid us a visit on their way home to the far northwest, being first noticed on March 10, when a pair were seen feeding on the seeds of the locust or false acacia tree. Five days later a flock of seven (out of which I obtained a fine male) visited my garden, feeding on the seeds of some crab apples still remaining on one of the trees, and on the twenty-first five more were observed in the same tree, of which no less than four were males in fine plumage. In addition to these fourteen examples Mr. W. E. Greer of Hatley Centre, informs me that he has seen a similar number, five on March 11, feeding on the seeds of some crab apples in his orchard, and nine on the seventeenth in a neighbor's orchard, which only alighted however for a minute (as there were no apples on the trees) and then continued their journey in a northerly direction. A noticeable feature this year both with regard to this species and the Pine Grosbeak (*Pinicola enucleator leucura*) the last of which were seen on April 14, has been the large number of full plumaged males, so different from previous years, when nearly all the flocks were composed of either females or immature males. My example of *H. vespertina vespertina* was given to the Victoria Memorial Museum at Ottawa, and I believe I am correct in stating that so far as the present material (which is somewhat scanty) there goes, it seems to indicate that there is no such thing in Canada as the Western race.—H. MOUSLEY, *Halley, Que.*

English Sparrow (*Passer domesticus*) Feeding on the Larva of the Elm Tree Beetle.—Here in West Haven we have a great many elm trees, which, if not sprayed, are badly infested with the elm tree beetle, the larvæ of which eat holes in the leaves causing them to turn yellow and

¹ See Auk, XXXIV, pp. 210-212, and p. 218.

fall to the ground. In July and August the larvæ having matured descend to the trunk of the tree where they crawl under the loose bark and form pupæ. For the last three years I have noticed English Sparrows working on the trunks of badly infested trees, but this year they were especially active, I having observed from one to four working on the trunk of a tree at a time. They would creep around the tree in Nuthatch fashion up as high as the first limbs for the descending larvæ. I stopped to watch a pair of sparrows working on a tree to be sure that they were feeding on the larvæ, I was only five feet away so I could positively see that they were taking the larvæ and as they flew away with their beaks full they evidently were feeding young. As I have never observed them taking the pupæ or imagoes so I could not say whether or not they take them, although I have seen them working on the ground at the bottom of the tree amongst the pupæ which became dislodged and fell to the ground. I believe the English Sparrow is becoming more insectivorous each year, as I have on several occasions observed them catching small moths on the wing, also breaking May beetles by pounding them on the sidewalk. Still, I believe the English Sparrow is decreasing in West Haven owing to the fact that the Starling, which is abundant at all times and occupies all available cavities, has forced the Sparrow to resort to the backs of blinds, where the nests are thrown out as soon as discovered. So, under the prevailing conditions I do not think that two pairs out of ten successfully rear a brood in a season. But nevertheless, let us hope that the English Sparrow will continue to be insectivorous, especially in July and August when the larvæ of the Elm tree beetle are at their height.—NELSON E. WILMOT, 24 New Street, West Haven, Conn.

The Slate-colored Junco in Colorado.—Dr. A. K. Fisher collected a specimen of the Slate-colored Junco (*Junco hyemalis hyemalis*) from a mixed flock in the suburbs of Denver, January 21, 1917. As this form is comparatively rare in Colorado, it seems desirable to record its occurrence in Denver, where hitherto I am inclined to believe it has not been detected. The specimen is in the collection of the Biological Survey at Washington.—W. H. BERGTOLD, Denver, Colo.

Nesting of the Chiapas Blue Grosbeak (*Guiraca cærulea chiapensis*).—Ridgway in his 'Birds of North and Middle America' gives this species as occurring on the "Plateau of western Chiapas." His data being derived from two specimens, one of which, from the State of Oaxaca, not being typical. Both of these specimens are females, the male being, to date, not described.

On May 26th, of the present year while on a collecting trip near the city of Tehuantepec with two youthful companions, I chanced upon the nest of this subspecies. Until this time I was not aware that it occurred in this locality and its discovery was therefore a surprise. Both during the fall and spring migrations the western form of the Blue Grosbeak is very

abundant and it is quite possible that this rarer subspecies may have been overlooked and confused with the migratory bird.

The nest was situated on the horizontal branch of a small mesquite bush in an abandoned cornfield. Being only about three feet from the ground it was well concealed by the rather tall grass and some vines of a little blossoming passion flower. The situation of the old cornfield was near the river bank which accounts, in this dry section of the State, for the grass and other green growth.

Upon discovery the parent bird was not present and a long watch was necessary before she made her appearance. Upon arrival she went at once to her nest, from which she was driven and shot.

Three fresh eggs were found in the nest, and dissection of the parent proved that the set was complete. The eggs appear to be pure white in color when unblown and exposed to the direct rays of the sun, but upon being emptied show a very delicate blue, lighter than that of our Eastern Bluebird. Through an accident two of these eggs were badly broken before our arrival home. The specimen not broken measures 23×17 mm.

The nest was well constructed and, roughly speaking, about 100 to 110 mm. in height and about the same in width. The coarser part, or foundation, is constructed of dried leaves, some finer portions of corn husks and, worked in through from one side to the other, the shed skin of a rather large snake. Forming the outer layer of this foundation are some dried weed stalks which are apparently held in position by coarse spider webs wound about the exterior after they have been placed in position. The nest proper is very neatly constructed of fine grass stems and lined with fine rootlets, yellow in color. The bowl of the nest is about 51 mm. deep and 60 mm. wide.

The parent is in full breeding plumage, and, unlike Ridgway's description, is lighter in color than specimens of *G. c. lazula*, especially below. It also shows washings of blue on the ear coverts and wings.—P. W. SHUFELDT, *Tehuantepec, Oaxaca, Mexico*.

Brewster's Warbler (*Vermivora leucobronchialis*) in Lexington, Mass.—In 'The Auk' for October, 1907, I recorded a Brewster's Warbler found during the summer of that year in a swamp in Lexington, Mass. In the decade that has since elapsed, this bird has been found established in the same swamp every summer except that of 1909, when no search was made for it. In 1910 and 1913, Dr. W. M. Tyler and I made a careful study of this hybrid and its relations with the Golden-winged Warbler (*V. chrysoptera*) and the Blue-winged Warbler (*V. pinus*). The results of our observations were published by me in the *Memoirs of the Museum of Comparative Zoölogy*, Vol. XL, Nos. 2 and 6, January 1911 and August, 1913. The persistence of this hybrid form in the same locality through so many consecutive years is in itself well worthy of record; I wish, too, to summarize the knowledge acquired relative to the matings of these birds and the duration of the nestling period.

In the season of 1910 there were two pairs of which the males were Golden-wings, the females Brewster's; one pair of Golden-wings; and one unmated male Brewster's. The issue of one of the heterogeneous pairs, Golden-wing and Brewster's, were all Brewster's Warblers, of the other, a mixed brood of Golden-wing and Brewster's. The pair of Golden-wings produced Golden-wings only.

In 1912 a male Golden-wing mated with a female Brewster's.

In 1913 a male Golden-wing mated with a female Blue-wing, a male Brewster's with a female Golden-wing. The progeny of the first pair were all Brewster's, of the second pair one Golden-wing plus several Brewster's.

In 1914 a male Brewster's mated with a female Golden-wing; their nest was not discovered till June 16, the day the young left it.

In 1917 a male Brewster's mated with a female Golden-wing. Here are six cases of the mating of Brewster's Warbler, each time with a Golden-wing, and one case of a Blue-wing mated with a Golden-wing. Observe that all previously published accounts of the pairing of Brewster's Warbler have been records of the union of this form with either a Golden-wing or a Blue-wing (see my paper in Mem. Mus. Comp. Zoöl., Vol. XL, No. 2, p. 71).

It is worthy of note that the numerous Golden-winged and Brewster's Warblers seen in this locality during these years have without exception exhibited an absolute purity of plumage in spite of the constant crossing of the two forms. In other words, no plumage intermediate between the Golden-wing and Brewster's has cropped out.

Duration of the nestling period: in 1897 the five eggs in a nest belonging to a pair of Golden-winged Warblers (Arlington, Mass.) hatched June 8, the young left the nest June 15. In 1910 the five eggs of a Brewster's Warbler mated with a male Golden-wing hatched June 8, the young left the nest June 17. In 1917, the five eggs of a Golden-wing mated with a male Brewster's Warbler hatched June 21, the young left the nest June 29-30. The life of the young birds in the nest therefore covers from seven to ten days.

The spring of 1917 was without precedent in its backwardness. *V. chrysoptera* did not arrive until May 19. This is latest date for the arrival of this bird in my records of twenty-eight years, the average time of arrival being May 11-12, the earliest, May 3 (1905). This will account for the phenomenally late breeding of the 1917 birds given above.

Several other localities in the town of Lexington are the home of Golden-winged Warblers, but none of them have ever yielded a Brewster's Warbler. In the adjacent towns I have twice seen a Brewster's Warbler: in Concord, May 19, 1912 (Faxon, Mem. Comp. Zoöl., Vol. XL, No. 6, p. 312, footnote 1), five miles from the Lexington swamp, and in Waltham, May 31, 1915, two miles from the Lexington locality.—WALTER FAXON, *Lexington, Mass.*

Late Southward Migration of the Cape May Warbler on Long Island.— Doctor Richmond's record of a Cape May Warbler (*Dendroica tigrina*) at Washington, D. C., December 16, 1916 (Auk, XXXIV: 343) seems to make appropriate some account of this bird's southward migration the same year on Long Island where, also, the last one was seen in December. My latest previous record is October 12 (1912).

On my grounds at Hewlett, on the south side of the island, is an open grove of red cedars which evidently offer some particular attraction to these warblers on their southward journey, and where, of late years, they have usually been more or less common at the end of August and in September, not infrequently remaining continuously present day after day. In the spring they are less often seen in these trees, showing then a preference for oak woodland. Some of these cedars are close to the house and it has occurred in several years that the "first arrival," to use a conventional term, has been seen from the windows in the early morning. In 1916 the first one was thus seen on August 26 (earliest record August 20, 1914). No other was observed until September 3, and during that month they were noted only a few times, making it appear that it was an "off year" for them in this region. But in October, from the 2d to the 8th; there was an unusual late flight, as many as six and seven being present on my grounds on several days. After this a single one was seen on the 13th and 15th. It may be of interest in passing to report of this particular bird that it was to be found the greater part of each day feeding in a willow where the sap was running from a row of holes made by a sapsucker. Often it was seen clinging to the trunk of this willow and pecking at the sap holes, but whether taking the sap or feeding on entrapped insects I could not determine.

My young daughters, who had come to know this warbler as a familiar bird, reported one on October 27, and again one November 15, on each occasion describing their bird so unmistakably that there was no possibility of error. On December 4, they observed another one, evidently a male in rather high plumage for the season. It was not at all shy, allowing them to follow it about and watch it feeding in the garden border on the berries of a tree of *Eleagnus umbellata* whose abundant fruit remained in an unripened condition. The next morning I myself saw the bird, obtaining several perfect views at a distance of not more than a few yards, my daughters, who were with me, could detect no differences in its plumage from the one they had watched the previous day, and there was no reason to suppose it was not the same bird. Both days had been fair and unusually mild for the season, the temperature standing at 53° in the early evenings.

Many birds on their southward journey lingered unduly that mild season, and at Hewlett a considerable number of species remained later, some of them much later, than I had ever recorded them before. Most noteworthy of all, perhaps, was the Cape May Warbler. For this reason its occurrence on Long Island and at Washington in December would seem to be less in

the nature of accidental happening than in conformity with a remarkably retarded migration, not necessarily of the species as a whole, but quite possibly of a regional group acted upon, perhaps as long before as their breeding season, perhaps later, by some unusual inhibiting influence. The late occurrence of this species the same year in Massachusetts, at Belmont, November 15, 19 and 25, has been reported by Dr. Walter Faxon (Auk, XXXIV: 217).

It may here be noted that the northward migration of this warbler the following spring was also unusually late, this, however, being true of most of the warblers, the result of a phenomenally cold and backward May. It was not observed until May 17, and the later dates of its occurrence were the 27th, a bright male and a dingy female, and June 3, a female; my latest previous record having been May 18, 1916.—EUGENE P. BICKNELL, *New York, N. Y.*

Rare Warblers at Hatley, Stanstead County, Quebec.—Notwithstanding the very cold and backward spring I have added two new warblers to my list (which now numbers 22 species), the Tennessee (*Vermivora peregrina*) and Blackpoll (*Dendroica striata*). Four examples of the former were seen between May 26–27, out of which two were obtained, and a male of the latter was seen at Ayers Cliff (about six miles from Hatley) on May 28 at close quarters, making identification absolutely sure. In addition to these between May 19 and June 2 may be mentioned twelve examples of the Cape May (out of which I secured three), Nashville, nineteen; Bay-breasted, twelve; Blackburnian, three; Northern Parula, one; and Water-Thrush, eight; besides numbers of all the commoner species with the exception of the Yellow which was again scarce as usual, only three examples being seen.—H. MOUSLEY, *Hatley, Que.*

Sap Drinking Habits of Warblers.¹—So far as I can gather very little is known concerning the above matter, for in the nine or ten pages devoted to the food of these interesting little birds in the standard work on their life history, not a word is mentioned about it, and the only reference I know of will be found in the Biological Survey, Bulletin No. 39 'Woodpeckers in Relation to Trees and Wood Products' 1911, p. 98, wherein the author, Mr. W. L. McAtee, speaking of some defensive measures against sapsuckers recommends poisoning the sap, but adds the following warning note, viz.: "It should be noted here that hummingbirds and some other small birds, particularly warblers, will be killed by poison intended for sapsuckers." From this we may gather that the habit is not altogether unknown, but the majority of people, I think, are unaware of it, certainly I have been paying special attention to this family for the past few years, but have never noted it until the fall of last year (1916) and therefore think my experience may be worth recording. It was on Sep-

¹ Read before the Nuttall Ornithological Club, May 21, 1917.

tember 19, that whilst passing close to an old silver birch tree on the borders of a large wood, a Myrtle Warbler (*Dendroica coronata*) flew off one of the overhanging branches, which at the time naturally caused me no surprise, nor was I particularly interested, when returning some two hours later the same thing occurred again. However in the afternoon when covering the same ground the warbler again left the branch, as well as a Yellow-breasted Sapsucker (*Sphyrapicus varius varius*) the trunk, I must admit my curiosity was aroused, and I decided to secrete myself and await results. It was not long before both birds returned to the tree, the sapsucker to some holes in the trunk, and the warbler to some on the upper side of the branch which I had not noticed. Here he regaled himself on the sap after the manner of his companion, and continued doing so for some considerable time, until I came out of hiding when both birds flew away. For the next two days I visited the spot on several occasions and every time the warbler was there, and usually the sapsucker as well but I never saw the former attempt to take the sap from the holes in the trunk, but only from those on the branch, where it was able to perch readily and drink at leisure, and no doubt eat any small flies or insects that may have got caught in the sap as well. The next case to come under my notice was that of an adult female Black-throated Blue Warbler (*Dendroica caerulescens caerulescens*) which on October 1 (the latest date as it so happens on which I have noticed it here) flew into the branches of a beach tree and commenced imbibing the sap from some old sapsucker holes. Whilst watching it I noticed another cluster of holes in the trunk, and it was not long before the bird on hovering wings after the manner of a hummingbird was abstracting the sap, and no doubt any insects from these also, thus differing in this respect from the Myrtle, which as already stated never once attempted the feat, although no doubt it was quite as competent to perform it as the other. It looks as though this habit may only be resorted to in the fall, when insects are scarce and late departing birds have some difficulty in making all ends meet.—H. MOUSLEY, *Halley, Que.*

A Roosting Place of Fledgling House Wrens.—A pair of House Wrens which had bred in a box in Mr. George Nelson's garden in Lexington, Mass., brought out their second brood of young in the morning of Aug. 19. 1917. The family remained in the vicinity of the box during the day. At twilight Mr. Nelson watched one of the parents assemble the young birds in a pitch pine tree near the box, and escort them to a little nest or platform well concealed among the pine needles where they settled for the night, huddled together in a compact mass. The Wrens' roosting place is five feet from the ground and twelve feet from the box they were reared in. It is a frail, circular, shallow cup, made of fine roots and was originally no doubt, the foundation of a Chipping Sparrow's nest. On the following night the young birds, after making a tour over the space of half an acre, during which they visited another nest twenty yards away, returned to the same place to roost. On the next evening (Aug. 21) I joined Mr.

Nelson and we watched the fledglings for half an hour at the close of their third day. They were in a pitch pine tree across the driveway from the roost. One or both parents brought food to them every five or ten minutes. These visits occasioned a lively chattering which resembled the clucking of Red-winged Blackbirds on a small scale. After the parent's departure the young birds quieted, although they often continued to give single, double, or triple clucks for a minute or two. Finally, as it was growing dark, about 6.45, all the young birds (five of them) fluttered across the drive and joined their parent. As the little, tailless birds flew overhead in quick succession, they appeared against the sky like tiny Woodcocks rising for a song flight. Nothing could be plainer than that the flight was in obedience to a command from the old bird,— the fledglings started at almost the same instant and hurried off all together. Tonight, under the guidance of the parent, they took a direction away from their former roost. We followed and found three of them in the abandoned nest which they visited last evening. On our arrival they came out and with much chattering withdrew. Twice a bird returned, hopped about the nest for a moment and then flew away. The family settled near, just where we could not see. On the following evening we saw or heard nothing of the brood at twilight.

It would be of interest to learn whether this use of abandoned nests of other birds is a common practice with the House Wren, especially when we recall that the male of some species of wrens builds seemingly useless nests while the female is sitting.— WINSOR M. TYLER, M. D., *Lexington, Mass.*

The Labrador Chickadee (*Penthestes hudsonicus nigricans*) at **Cohasset, Mass., late in May.**— From May 19 to 23, 1917, inclusive, a Brown-headed Chickadee, probably the Labrador form, was seen several times each day in the garden. The bird was very tame and easily recognized. The peculiar note first attracted my attention, and after once seeing the bird it was easy to find it at any time during its stay with us. Usually it was with a small flock of the Black-capped Chickadee (*Penthestes a. atricapillus*) and was as easily approached and as tame as is its more southern relative. A thick row of spruces bordering the garden seemed to be its favorite haunt. Neither species remained on the place during the summer.— ARTHUR P. CHABOURNE, M. D., *Jerusalem Road, Cohasset, Mass.*

Labrador Chickadees at Hatley, Stanstead County, Quebec.— It is with pleasure that I record a visit of Dr. Townsend's new subspecies the Labrador Chickadee (*Penthestes hudsonicus nigricans*) to Hatley, on its return journey to its breeding grounds. The birds were first observed on May 14 and between that date and the thirtieth on which the last was seen, seven examples were secured, three being sent to Dr. Townsend, and the other four to the Victoria Memorial Museum at Ottawa. The former

consisted of two adult males and one female, the latter of two males and two females. They were generally alone or in the company of Golden- or Ruby-crowned Kinglets, and were somewhat shy and difficult to approach, which made their exact number not easy to estimate. Besides the seven obtained I can only positively assert to having seen four other examples, although I know there were several more that I was unable to follow up.—H. MOUSLEY, *Halley, Que.*

Rare Winter Visitants in Northern Indiana.—1. ***Astur atricapillus atricapillus***. GOSHAWK.—One seen carrying a rabbit in its talons at Mineral Springs, Porter County, Ind., Feb. 17, 1917.

2. ***Picoides arcticus***. BLACK-BACKED THREE-TOED WOODPECKER.—A fine male of this species was taken near Millers, Lake County, Ind., on March 11, 1917. When first seen the bird was busily engaged in digging larvæ from under the bark of a dead northern scrub pine, in a small grove of these trees a short distance from the shore of Lake Michigan. It was very tame and appeared rather sluggish and clumsy in movement.

The stomach contained nearly complete skins with heads of eleven wood boring larvæ, and heads only of twelve more. These larvæ were identified for me by Mr. A. B. Walcott of the Field Museum as *Monohammus titillator* var. *carolinensis*, Oliv. This is the first Indiana record for this woodpecker.

3. ***Hesperiphona vespertina vespertina***. EVENING GROSBEEK.—Present in small numbers in the dune region, although not nearly so numerous as during the previous winter. A flock of fourteen were seen feeding on poison sumac berries at Mineral Springs, Porter County, on Nov. 25, 1916. A single bird was noticed at the same place, also feeding on these berries on Dec. 23, 1916. My last record was March 24, when five or six were seen.

4. ***Acanthis linaria linaria***. REDPOLL.—Unusually abundant throughout the winter, appearing in large flocks about the middle of November and remaining until late in March, a small flock being seen on March 24. Many hundreds of these birds were seen migrating northward along the lake shore on the evening of March 11, 1917.

5. ***Acanthis hornemanni exilipes***. HOARY REDPOLL. Four or five very light colored redpolls were seen feeding by the roadside with a large flock of *linaria* at Mineral Springs, Porter County, Ind., on Dec. 23, 1916. One of these which was collected and compared with specimens in the Field Museum proved to be the Hoary Redpoll, *Acanthis hornemanni exilipes*, a new record for the State. The specimen is perfectly typical in every respect, with the exception of the rump which is not as white as is usual in this variety. The skin is in the Harris Extension collection.—H. L. STODDARD, *The N. W. Harris Public School Extension of Field Museum, Chicago, Illinois.*

RECENT LITERATURE.

Bergtold on the Incubation Periods of Birds.¹—It is refreshing to find an ornithological writer who strikes boldly out upon an essentially new line of research as Dr. Bergtold has done in the volume before us. The problem to the solution of which he has applied himself is by no means an easy one. The personal collection of the necessary data being out of the question, the author has had to depend upon such as could be compiled from widely scattered literature, the inaccuracies of which as the author explains have often proved confusing. When we realize that Dr. Bergtold was removed from any of the large scientific libraries and that his investigations were "carried on in the spare moments of a fairly busy professional life," we are astonished at the completeness of his treatment of the subject.

To use his own words: "The problem in hand is to answer the question, Why does a house finch's egg take fourteen days to hatch, an ostrich's forty-two days, an emu's fifty-six days, or a hummingbird's fourteen days? . . . to analyze the published data, . . . to examine the explanations heretofore given . . . and to determine if there be a law which controls the length of incubation." The author considers in order the various possible factors which might affect the time of incubation, quoting previous writers and weighing the evidence for and against each theory, referring constantly to accompanying tables of length of incubation for various species, weight of birds, weights of eggs, and bird temperatures—all of them compiled from a wide range of publications and from some original data secured by the author and his friends.

Dr. Bergtold tentatively concludes on the one hand that the length of incubation is only loosely related to the size of the bird or the egg and not at all to the longevity of the species, the body-weight egg-weight index, age of the female or size of the egg yolk. On the other hand he considers that there is a true length of incubation which is a deep seated, persistent, specific character, that bird temperatures are closely related to taxonomic lowness or highness of the species and finally that "a bird's temperature determines or fixes the time of its incubation period,"—the higher the temperature the shorter the period.

Dr. Bergtold further considers it likely that variation in the period of incubation and in temperature exists among the species of any family, from those taxonomically lowest to those taxonomically highest, so that a curve of variation from the lowest to the highest birds would show undulations within each family. In this connection he says: "The question of lowness or highness in birds, in the present discussion, is a question of

¹ A Study of the Incubation Periods of Birds. What Determines their Lengths? By W. H. Bergtold, M. D., M. Sc., Member of the American Ornithologists' Union. The Kendrick-Bellamy Co., Denver, Colorado. 1917. 8vo, pp. 1-109. \$1.50 postpaid.

how far a given species has journeyed away from its proto-avian stem, since it seems probable that the farther a bird is from its primitive ancestry, provided it does not later degenerate, the higher will be its temperature. I doubt very much that the present mainstays of taxonomy can alone measure this space between pro-bird and super-bird. I believe that future students of avian taxonomy will have to give more consideration, not only to embryology, but also to bird physiology, in order to correctly locate and plot the mileposts in a bird's journey."

In considering his data Dr. Bergtold calls attention to the real and apparent time of incubation, the latter being the actual time plus that due to errors of observation or to the fact that in some species early laid eggs are incubated to some extent during the laying of the subsequent ones — facts that should be considered in making use of published data. The lamentable scarcity of information on the weights and temperatures of birds is emphasized as well as the numerous opportunities for experimental investigation which the problems here discussed offer.

Dr. Bergtold's book is a valuable contribution to a neglected line of research and can be read with profit by all ornithologists. That it does not represent the last word on the subject the author is the first to admit but it is so suggestive throughout that it cannot help but attract others to this interesting field, and we trust that ere long the accurate detailed data necessary for the final consideration may be forthcoming. And in this work our Australian friends can give valuable assistance by supplying the data on the temperature of the Megapodes which Dr. Bergtold has been unable to obtain.

Pending the accumulation of further data we may accept his conclusions as the most plausible solution of the problem yet presented, and even if, as the author suggests, they be not entirely original they are certainly more concisely and convincingly set forth than has been done by anyone else.

We regret that the book shows numerous evidences of hasty proof-reading resulting in some misleading errors, as "egg-white" for egg-weight, on page 44. We also notice on page 16 a reference to the relationship of "the finches of Australia . . . to their cousins of the North" but the so called "finches" of Australia are really Weavers and belong to a different family.—W. S.

Howell on the Birds of the California Coast Islands.¹— This admirable paper forms No. 12 of the 'Pacific Coast Avifauna' published by the Cooper Ornithological Club and maintains the same excellence in style and typography presented by recent numbers of the same series. Mr. Howell having formed a personal acquaintance with the birds of some of the islands, was impressed with the need of a comprehensive treatise on the avifauna

¹ Birds of the Islands off the Coast of Southern California. By Alfred Brazier Howell. Pacific Coast Avifauna No. 12. Cooper Ornithological Club. June 30, 1917. pp. 1-127. Price \$1.50.

of the group as a whole and began a compilation of data from published papers and manuscript notes of others who had visited the islands, which has resulted in the brochure before us. The author covers the whole series of islands generally known as the Santa Barbaras, from San Miguel on the north to San Clemente on the south as well as Los Coronados lying off the northern part of Lower California, which so far as their fauna is concerned belong to the same group.

Altogether 195 species are considered, with 13 others in a hypothetical list. A full synonymy under each species gives all references to papers dealing with its occurrence on the islands. The text consists of a summary of these and other original data as well as a consideration of the relation of the island birds to those of the mainland in the case of resident species where there is any reason to suspect subspecific differences. Nineteen island forms have been named, some of which have not been considered by the A. O. U. Committee as sufficiently differentiated to warrant recognition. Mr. Howell follows the views of the Committee in such cases so far as nomenclature is concerned though the differences are fully discussed in his text. In one or two cases he points out slight differences between island and mainland representatives of other species but wisely refrains from burdening them with names. In a table appended to the list proper, the occurrence of each species on the various islands is graphically shown, and they are further listed according to time and character of occurrence. We find here that no less than 56 species are resident, while eight others occur at any time of year but do not breed on the islands and six additional species are summer visitants.

In the introductory pages Mr. Howell gives an interesting account of the physical features of the several islands and discusses the problems which their fauna presents. He considers the recognition of a Santa Barbara Island Faunal Area more a matter of geographical convenience than an indication of any peculiarity in the fauna. In the main he considers the island fauna San Diegan, though it contains Sierran elements and a suggestion of the San Francisco Bay Region. Changes in the habit of the resident birds and the earlier nesting dates and period of molt as compared with birds of the mainland are described and an excellent bibliography and index close the publication.

The plan of Mr. Howell's fauna is excellent and it has been admirably carried out. Both he and the Cooper Club are to be congratulated upon this addition to their series.—W. S.

Shufeldt on a Fossil Bird from the Florissant Shales.¹—This brief paper describes impressions of the foot and pelvis of a bird which Dr. Shufeldt regards as most closely resembling the Purple Grackle so far as measurements go and he is inclined to think that they represent a passerine

¹ Fossil Remains of What Appears to be a Passerine Bird from the Florissant Shales of Colorado. *Proc. U. S. Nat. Mus.*, Vol. 53, pp. 453-455, pls. 60-61. August 15, 1917.

bird of about the Grackle's size but adds "there is no certainty about it whatever" and so wisely refrains from naming it.—W. S.

Richmond's Third Supplement to Waterhouse's "Index Genera Avium."¹—This welcome publication follows the plan of its predecessors except that the types of the genera have been determined according to the rules of the International Code of Nomenclature and derivations of names have been omitted except when furnished by the original authors. Some 600 names are listed of which more than half have been published since 1905 and of these about 175 are credited to Mr. Gregory M. Mathews. Perhaps the most important feature of this supplement is the list of errors in Waterhouse's 'Index.' This consists of vernacular and other names which have no generic status at the citations given, errors in spelling and in statement, all of which are corrected by Dr. Richmond, and nomina nuda, for which the proper citations are given. Lists of Linnæan genera which are citable at earlier date than those given by Waterhouse (mainly due to his adoption of the 12th in place of the 10th edition of the *Systema*) are given, as well as original references to Bonaparte's genera which appeared originally in the 'Ateneo Italiano' and corrections to the two previous "Supplements."

With this pamphlet before them systematic ornithologists are for the first time in possession of accurate references to all the genera of birds so far as known. That a few still remain to be unearthed from obscure publications goes without saying, but they will not begin to approach the number included in the present list which latter represents the results of the painstaking researches of both Dr. Richmond and Mr. G. M. Mathews during the past ten years.

When one considers that much of Dr. Richmond's time has necessarily been taken up in searching out the true date of issue of many wrongly dated publications it seems like the irony of fate that his own paper should be antedated. It seems high time that someone in charge of the scientific publications at Washington takes steps to check this unfortunate practice.—W. S.

Aves in the Zoological Record for 1915.²—Mr. W. L. Sclater is again the author of that section of the Zoological Record devoted to birds, and has compiled a list of 934 titles for the year 1915, with the usual rearrangement of references under various subjects — geographic, economic, plumage,

¹ Generic Names Applied to Birds During the Years 1906 to 1915, inclusive, with additions and corrections to Waterhouse's "Index Genera Avium." By Charles W. Richmond, Assistant Curator of Birds, United States National Museum. Proc. U. S. Nat. Mus., Vol. 53, pp. 565-636. August 16 (= 25), 1917.

² Zoological Record. Vol. LII, 1915.—Aves. By W. L. Sclater, M. A. May, 1916. Printed for the Zoological Society of London, sold at their House in Regents Park, London, N. W. Price six shillings. pp. 1-74.

migration, etc., and a list of all new species and genera arranged systematically. This publication is invaluable to the working ornithologist and deserves a much larger sale than it has had in the past. Its continuation from year to year is essential to the advance of ornithology and the Zoological Society should be given every support possible in the good work that it is doing.—W. S.

Kuser's 'The Way to Study Birds.'¹—This attractive little book is another of the numerous publications designed to aid the beginner in identifying the familiar birds of the eastern states. Mr. Kuser's plan is the reverse of that usually advocated in such books as he presents concise accounts of a number of the most abundant species to be found in the vicinity of New York City, and then instructs his readers to familiarize themselves with the appearance of the first one and go out into the field and find it before taking up the second, and so on through the series. That he does not discourage the usual plan of finding your bird first and identifying it from the books later is shown by the fact that he presents a field key to be taken into the field or to be used in identifying descriptions made there. While the two sets of instructions are somewhat contradictory good results may be gotten from each, while the additional information on bird protection, winter feeding, note-keeping, bird books and bird societies will answer many questions for the reader. The well printed color plates from paintings by Louis Agassiz Fuertes add much to the attractiveness of the book.—W. S.

The Birds of Australia.²—The fourth part of Volume VI of Mr. Mathews' work treats almost entirely of the genus *Platycercus* of which he recognizes seven species including some of the most brilliantly colored of the Australian parrots. Much interesting information concerning their habits and distribution is furnished by the author's Australian correspondents, while he has traced out the history of their discovery and as usual has considered the nomenclature and synonymy of the species at considerable length. We notice only two new names proposed in this number, *i. e.*, *Platycercus caledonicus flindersi* (p. 328) from Flinders Island, and *P. eximius colei* (p. 360) from Ballarat, Victoria.—W. S.

Brooks on Some Falkland Island Birds.³—Mr. W. Sprague Brooks, who recently spent several months on the Falkland Islands in the interests of Dr. John C. Phillips, presents in the present paper his notes on the forty-three species of birds which came under his observation. Many

¹ The Way to Study Birds. By John Dryden Kuser. With 9 Illustrations in Color. G. P. Putnam's Sons. 1917. pp. 1-85. Price \$1.25 net.

² The Birds of Australia. By Gregory M. Mathews. Vol. VI, part IV. June 27, 1917.

³ Notes on Some Falkland Island Birds. By W. Sprague Brooks. Bull. Museum Comp. Zool., Vol. LXI, No. 7. June, 1917. pp. 135-160, pls. 1-3.

interesting accounts of the habits of the species are given, those dealing with the Gentoo Penguin, Upland Goose and Steamer Duck being the most extended. *Halobæna murphyi* (p. 146) is described as new from a skin received from South Georgia Island, while *Anthus phillipsi* and *Phrygillus malvinarum* have already been described by the author and *Clæphaga hybrida malvinarum* by Dr. Phillips from material collected on the Falklands. The plates are some excellent reproductions of photographs of Penguins, Geese and Steamer Ducks.

The introductory paragraph of this interesting paper is unfortunately brief. Neither the personnel of the expedition nor the dates which it covered are given nor is there any mention of the size of the collection nor its disposition, though we infer that it is in the Museum of Comparative Zoölogy.—W. S.

Richmond on New Birds from Haiti.¹—Dr. Abbott's recent exploration of the northwestern peninsula of Haiti and the adjacent island of Tortuga has yielded a collection of twenty-three species of birds of which two prove to be new. These Dr. Richmond describes as *Nyctibius griseus abbotti* (p. 1), Port de Pimente, and *Vireo crassirostris tortugæ* (p. 2), Tortuga Island. The occurrence of *Nyctibius* is particularly interesting as the genus was hitherto unknown from the island.—W. S.

Brooks on 'The Food of West Virginia Birds.'²—The aim of this publication is to provide a simple, readable work of reference on the birds of West Virginia with especial reference to their food habits. The author's long acquaintance with birds of the state, and his attention to economic ornithology have enabled him to succeed in his purpose. A few points not given sufficient consideration may be mentioned. In the section on "Birds in Relation to Trees and Forests" (pp. 12-13) the injurious effects of sapsucker work are passed over lightly and the impression even given that the value of lumber is enhanced. This is theoretically possible but practically of no importance, while damage is abundant and severe.

The statement in another place (p. 41) that sapsucker work produces the birds-eye effect in maples is misleading, as the birds-eye resulting from this cause is distinct from that having commercial value, and is invariably accompanied by defects that render it useless. In his section on "Birds and Fruits" (pp. 14-16), Mr. Brooks cites an observation of his that birds did not seem fond of mulberries, and says it seems to disprove the theory that mulberries serve as a protection to cultivated cherries. The protective value of mulberries among small fruits is so well established as to be no longer a theory. In any case, a single observation to the contrary cannot

¹ Descriptions of Two New Birds from Haiti. By Charles W. Richmond. Smithsonian Misc. Collns. Vol. 68, No. 7. July 12, 1917. pp. 1-3.

² Brooks, E. A. Bull. 15, West Va. Dept. of Agriculture, March, 1916, 74 pp., 20 half-tones, 3 col. pl.

overbalance almost unanimous testimony, based on many years of experience on the other side of the proposition. Mr. Brooks gives considerable space to general discussion of Economic Ornithology and the Protection of Useful Birds. Treatment of birds by systematic groups however makes up the bulk of the report.—W. L. M.

Bird Pests in War Time.¹—Recent publications of the British Board of Agriculture and Fisheries show that war has brought home the necessity of controlling crop destroying pests, birds as well as mammals. Thus sparrows are coupled with rats and rooks with rabbits. The formation of rat and sparrow clubs is advised and the details of organization, and amounts of bounties they may pay are specified. For sparrows the rates, in each case for a dozen, are: one penny for eggs, two pence for young, and three pence for adults. Various methods of combating sparrows and rooks are advised, those involving the destruction of eggs and young being most favored. The sparrow is definitely classed as "small vermin" for which under certain restrictions poisons may be legally laid. To conserve lead the use of ammunition for destroying pests is permitted only under license.—W. L. M.

Field Study of the Food of Nestlings.—The 1915 volume of the Proceedings of the Indiana Academy of Science which has just come to hand (June 25, 1917) includes an article on 'The Food of Nestling Birds.'² This paper contains detailed records of the number of feedings of broods of the Brown Thrasher, Robin (10 nests), Wood Pewee (2 nests) and Kingbird. The general nature of the food also is shown.

So far as this data goes, it is good, but it does not have the value implied by the authors in their somewhat inaccurate remarks upon another method of studying the food of nestlings. "It is contended," say they, "that the stomach contents afford the only accurate and reliable method of study of the food of birds. We believe that this method is not applicable to the food of nestling birds for two reasons: first, the food is soft and not readily identifiable; and the second and more important reason is that the food is digested very rapidly. The stomach contents do not serve as a criterion of the *quantity* of food that is eaten in the course of a day" (p. 232).

The remark in the last sentence is true; we must depend upon field observations to a large extent for ideas upon the quantity of food consumed. It must not be inferred however, that stomach examination is useless in this respect; on the contrary, it has served as the basis for a number of valuable estimates.

The declarations of Messrs. Enders and Scott, relating to the identification of the food of nestlings by stomach examination are wide of the mark

¹ Leaflet No. 84, 1916, and Bulletins 2 and 4 of Series A, 1917.

² Enders, H. E., and Scott, Will, pp. 323-337.

and are the result of inexperience. The facts are: that nestlings do not thoroughly digest their food (apparently taking only the most available nourishment), so that identification is easier in corresponding cases than in adults; and that not only stomach analysis, but even examination of excrement, gives results that far surpass in definiteness and accuracy, anything that can usually be learned by field observation.

For instance contrast the following statements of the results (from the paper reviewed) of 16 hours watching the feeding of brown thrasher nestlings and the analysis of a few droppings of nestling cardinals.

<i>Brown Thrasher</i>	<i>Cardinal</i>
150 cutworms	17 rose-beetles (<i>Macrodactylus subspinosus</i>)
9 "worms"	2 other Scarabæidæ
5 earthworms	1 click beetle (<i>Limonius</i> sp.)
11 dragonflies	1 caterpillar hunter (<i>Calosoma scrutator</i>)
10 beetles	1 leaf-hopper (Jassidæ)
50 ants	3 grasshoppers
1 grasshopper	1 spider
72 or more other insects.	1 dragonfly
	many bits of snail
	17 blackberry seeds (<i>Rubus</i> sp.)
	221 mulberry seeds (<i>Morus rubra</i>)

Is it not obvious that the examination of excrement if carried on to an equal extent would surpass field observations in every way? Stomach examination would be still more definite as to composition of food; but would not yield so much information on quantity. The greatest defect of this method however, is that only one batch of data is obtained from a single individual.

The foregoing notes on the cardinal are quoted from the reviewers' paper on the grosbeaks,¹ where the method of studying the food of nestlings by analysis of the excrement was urged. The method used was to tie a bag with a distinctly colored tape, over the breastbone and under wings of each nestling. The excrement can be gathered from such bags at any intervals desired and preserved as separate castings or in mass for analysis. The observer need not remain at the nest but can carry on similar operations at several nests if desired. This work could be carried on by the same class of observers who now publish data on the frequency of feeding and the material if analyzed by competent scientists, would yield a vast amount of definite and therefore valuable information.—W. L. M.

Effect of Poisoning Operations on Birds; Value of Carrion Feeders.—These interesting topics are further illuminated by data presented by W. W. and J. L. Froggatt in their third report on sheep-

¹ Bull. 32, U. S. Biol. Survey, 1908, pp. 23-24.

maggot flies in Australia.¹ As one of the measures directed toward the control of flies, carcasses are sprayed with arsenic water. Large numbers of flies are thus killed but there is no evidence that birds are destroyed by feeding upon the poisoned flies. The authors cite corroborative experience in South Africa where storks fed freely upon poisoned locusts without ill effects.²

Messrs. Froggatt note that many people consider that rabbit poisoning operations are responsible for a decrease in the number of birds and therefore for the pest of blowflies. The principal bait used for rabbits appears to be poisoned bran and as the work is done upon a large scale the bait is hauled about in carts. The authors express the opinion however that "the use of the poison-cart has been a very minor factor in the decrease of insectivorous birds, for with the exception of one or two, these birds do not follow the poison-cart to pick up the bits of poisoned bran or devour the dead rabbits." (p. 22). Where birds have been reduced it has been due chiefly to clearing of the land, to lack of water and to depredations of feral cats.

The testimony of these Australian authors is interesting to us in the United States, as there are complaints that the use of poisoned bran as bait for cutworms has caused destruction of birds. The United States Bureau of Entomology which recommends this method has looked carefully into the question of possible effect upon birds and has decided that no harm is done. Nothing in the experience of the United States Biological Survey has inclined it to doubt this conclusion.

When poisoned grain is used the effect is sometimes disastrous however, as Mr. S. E. Piper stated in his report on the mouse plague in Nevada.³ He remarks: "Unfortunately a large number of magpies and blackbirds fell victims to the poisoned grain; while to a less extent meadowlarks, killdeers, and mourning doves were killed."

The other point brought up by Messrs. Froggatt, the possible poisoning of predatory and carrion feeding birds by their eating animals killed by poisons has been carefully investigated by field men of the Biological Survey and their unanimous conclusion is that such destruction is negligible.

Destruction of birds by direct feeding upon baits placed for predatory animals however, is another question and one that should be kept in mind at all times in the great campaign of this kind now being waged in our western states. In Australia "the destruction of the carrion-feeding birds

¹ Farmers' Bull. 113, Dept. of Agric., New South Wales, June, 1917, p. 9 and pp. 21-24. Bull. No. 95 on the same subject was noticed in 'The Auk,' 33, No. 2, April, 1916, p. 217.

² In this connection see Mr. E. H. Forbush's summary (Ninth Ann. Rep. State Ornithologist, 1916, p. 24) of the examination of birds thought to have been killed by spraying operations in Massachusetts, "Thus far the evidence is chiefly negative, as in nine years only three birds that possibly were poisoned by spraying have been found." Another valuable publication to consult is 'Arsenical Residues after Spraying,' by W. C. O'Kane, C. H. Hadley, Jr., and W. A. Osgood, Bull. 183, N. H. Agric. Exp. Sta., June, 1917.

³ Yearbook, U. S. Dept. of Agric., 1908 (1909), p. 308.

commenced and was nearly completed. . . . by the use of strychnine baits laid for dingoes, wild dogs, wedge-tailed eagles, and crows, for it attracted and killed out most of our numerous useful small eagles and hawks" (p. 22).

The authors go on to say: "The carrion and carnivorous birds were so numerous less than forty years ago that very little carrion about the home station or sheep paddocks remained long enough to decay or to feed maggots. The inhabitants of the Southern United States and Mexico are wiser with their scavenger birds. They protect the turkey buzzard or vulture which is semi-domesticated in their towns, and so numerous that even a dead horse or bullock is stripped to the bone before it has been dead twenty-four hours" (p. 22). Whatever the merits of this encomium it now comes rather as coals of fire for the Southern States mostly have reversed their policy respecting the buzzard chiefly on account of a conjectural relation of the bird to the spread of stock diseases.¹

Messrs. Froggatt are of the opinion that "the carrion-destroying birds had a very great deal to do with the reduction of the numbers of insects like blow-flies. . . . far more than the true insectivorous birds." However, some of the latter are commended for feeding upon the sheep-maggot flies, among them the Noisy Minah (*Myzantha garrula*), the White-eared Honey-eater (*Ptilotis penicillata*) and the Willy Wagtail (*Rhipidura tricolor*). Two of these are additional to the four groups mentioned in the previous report. A further warning is sounded regarding the starling.—W. L. M.

Economic Ornithology in recent Entomological Publications.—

In a report on white grubs which injure sugar cane in Porto Rico,² Mr. E. G. Smyth gives considerable credit to bird enemies of these pests. He refers to the results of stomach examination cited in Wetmore's 'Birds of Porto Rico' ³ and gives an account of some of his own field observation.

"The blackbird or "mosambique," Mr. Smyth says, "is placed as the most important bird enemy of white-grubs because of its great abundance in those parts of the Island where the white-grubs are most injurious, namely, in the arid coast districts. It is a very common sight to observe considerable flocks of these birds following the plows and picking up grubs when fields cleared of cane are being broken up. . . . At Santa Rita, near Guanica Centrale, during the winter plowing season, actual observation and count, it was shown that over 90 per cent of the grubs exposed to light by the plows are picked up by these birds, so that the employment of peons to follow the plows and pick grubs is quite unnecessary in that district. When it is considered that a bird is able to consume more than the equivalent of its own weight of food in twenty-four hours, and that black-birds during the plowing season of five to six months subsist almost wholly

¹ See 'The Auk', 30, No. 2, April, 1913, pp. 295-8.

² Journ. Dept. Agr. Porto Rico, 1, No. 2, April, 1917, pp. 53-54.

³ Bull. 326, U. S. Dept. Agr. 1916, reissued as Bull. 15, Insular Exp. Sta., P. R. 1916.

upon grubs, one may appreciate the vast numbers of grubs that they consume."

The authors of a bulletin on 'Grasshoppers and their Control,' in South Dakota recognize the importance of the bird enemies of these pests. They say:¹ "Practically all birds which feed in fields infested with grasshoppers, include these insects in their bill of fare, but the following are the most useful in this respect: prairie chickens, quails or bob whites, meadow larks, Franklin gulls, all species of plovers, sparrow hawks, marsh hawks, red-winged blackbirds, yellow-headed blackbirds, purple grackles, crows, screech owls, burrowing owls, robins and several kinds of sparrows. Chickens and turkeys when present in sufficient numbers, also aid in checking an outbreak of hoppers." — W. L. M.

Report of the Biological Division of the Canadian Geological Survey for 1916.²— Besides the report on museum accessions and activities there are to be found in this volume an account of a reconnaissance in Barkley Sound, on the West Coast of Vancouver Island, by Clyde L. Patch, with an annotated list of the birds obtained — 37 species — by P. A. Taverner. Mr. Taverner also has a list of 103 species obtained at Brackendale, Lillooet and McGillivray Creek, B. C., by C. H. Young and W. Spreadborough, and another account of a collection of 33 species made by C. H. Young, at Douglas, Manitoba. In the same report Dr. R. M. Anderson has an account of the work of the Canadian Arctic Expedition of 1914-1916, with an annotated list covering 61 species of birds. All these lists are termed "preliminary." — W. S.

The Ornithological Journals.

Bird-Lore. XIX, No. 4. July-August, 1917.

Children of the Midnight Sun. By Joseph Dixon.— An illustrated account of the breeding habits of the Semipalmated Sandpiper on the Arctic coast of Alaska.

The Giant Bird Diatryma. By Walter Granger.

The Schuylkill Heronries. By Frank L. Burns.— An historical account of the Night Heron rookeries north of Philadelphia and the constant persecution and wanton destruction which has almost exterminated them.

The Educational Leaflet treats of the Phœbe, with a colored plate by Sawyer.

The Condor. XIX, No. 3. May-June, 1917.

The Home Life of the Baird Sandpiper. By Joseph Dixon.— Another study on the Arctic coast of Alaska, with illustrations.

¹ Bull. 172, S. D. Agr. Exp. Sta., February, 1917, p. 565.

² Summary Report of the Geological Survey, Department of Mines for the Calendar Year 1916, Ottawa, 1917. pp. 337-386.

Wild Ducks in City Parks. By W. W. Richards.—Four remarkable photographs taken on Lake Merritt, Oakland, California.

Some Factors Involved in the Nesting Habit of Birds. By Clarence H. Kennedy.—A popular account of modifications in bird structure connected with the development of the nest-building habit.

The Status of *Aphelocoma cyanotis* and its Allies. By Harry C. Oberholser.—After studying a large series of these Jays Dr. Oberholser finds that *A. cyanotis* does not occur within the boundaries of Texas, specimens so identified proving to be *texana*, and it must therefore be eliminated from the A. O. U. Check-List. Furthermore he finds that with the exception of the Florida Jay (*A. cyanea*), and *A. insularis* from Santa Cruz Island, all the forms intergrade and must therefore be rated as subspecies of *A. californica*. *A. c. immanis* Grinnell he regards as a recognizable race.

Birds of the Humid Coast. By Florence M. Bailey (concluded).—A delightful account of the birds of the California coast region.

The Condor. XIX, No. 4. July–August, 1917.

The Ospreys of the Yellowstone. By M. P. Skinner.

Habits of the Magpie in Southeastern Washington. By Lee R. Dice.

The winter Migration of 1916–17 in the Northwest. By J. Hooper Bowles.—Photograph of Bohemian Waxwings.

Observations on Some Fresno Birds. By H. S. Swarth.

Some Birds of Central Oregon. By Alex Walker.—An annotated list of 139 species.

The Wilson Bulletin. XXIX, No. 2. June, 1917.

Some Notes of the Birds of Rock Canyon, Arizona. By F. C. Lincoln.—An annotated list of 66 species.

Some Local Names of Birds. By W. L. McAtee.—Local names for 156 species supplementary to a previous list published in 'Forest and Stream,' Vol. 77, pp. 172–174 and 196–197.

More Records from the "Shores" Collection. W. F. Henninger.—Mainly from Connecticut.

A Criticism of two Recent Lists of Iowa Birds. By Ira N. Gabrielson.—Errors in a paper by C. L. Fenton corrected and other probable errors in this paper and one by F. M. Tuttle are pointed out.

The Oölogist. XXXIV, No. 6. June 15, 1917.

Bird Collecting in Eastern Colombia. By Paul G. Howes.—The author's diary on the American Museum Expedition of 1913, under Dr. F. M. Chapman (continued in the July and August numbers).

Oölogist. XXXIV, No. 7. July, 1917.

Nesting of the Mallard Duck at Branchport, N. Y. By Verdi Burtch.

The Ibis. X Series. V, No. 3. July, 1917.

Notes on the Ornithology of Malta. By G. Despott.—The first installment consists of a bibliography and an annotated list of 146 species.

Notes on the Nidification of some Indian Falconidæ. II. The Genus *Accipiter*. By E. C. Stuart Baker.

A Collection of Birds from two Districts of British East Africa. By

C. W. Mackworth-Praed.—Collections were made on the Tsavo River and about Thika. 188 species are listed, and several groups are considered at some length—notably the species of *Podica*.

What is *Turdus minutus* Forster, from Cook's Botany Island? By L. Brasil.—Identifies it with *Acanthiza flavolateralis* of G. R. Gray.

Notes on Birds recently observed in Macedonia. By Capt. A. G. K. Sladen.

Bulletin of the British Ornithologists' Club. CCXXV, May 25, 1917.

Lord Rothschild discussed the species of *Lophophorus* and came to the conclusion, with the aid of a large amount of new material, that *L. refulgens* and *L. impejanus* are one and the same species.

Dr. Hartert called attention to the peculiar protuberance on the belly of *Textor*.

Bulletin of the British Ornithologists' Club. CCXXVI, June 26, 1917.

Dr. Hartert described *Alaemon alaudipes boavistae* (p. 56) from Boavista Cape Verde Islands.

British Birds. XI, No. 1. June, 1917.

Additions and Corrections to the Hand-List of British Birds. (Second List.)

Notes on the Breeding Habits of the Dotterel on the Yenesei. By Maud D. Haviland.

Field Notes on the Nesting of the Dotterel in Scotland. By Capt. C. S. Meares.

The Moults of the British Passeres. By H. F. Witherby. This installment and the one in the following number cover the warblers and thrushes.

British Birds. XI, No. 2. July, 1917.

The Severe Winter of 1916-17 and its Effect on Birds in the South of Ireland. By C. J. Carroll.—The mortality all over Ireland was "desperately heavy."

Some Notes on the Breeding Habits of the Merlin. By E. R. Paton.

British Birds. XI?, No. 3. 1917.

Field Notes on the Nesting of the Hobby. By Capt. C. S. Meares.

The Moults and Sequence of Plumages of the British Waders. By Annie C. Jackson.—A valuable article supplementing Mr. Witherby's papers on the moult of the Passeres. It is gratifying to read that the author would emphasize the fact that "colour change without moult, excepting of course effects due to abrasion and fading, plays no part in the sequence of plumages of the *Limicolæ*."

Avicultural magazine. VIII, No. 8. June, 1917.

The Red-breasted Goose (*Bernicla ruficollis*). By H. D. Astley.—With colored plate.

Birds in London and Suburbia. By Allen Silver.—An interesting paper especially to those who make "city lists" in this country.

Avicultural Magazine. VIII, No. 9. July, 1917.

On taming Parrots. By Rosie Alderson.

Bird Notes. VIII, No. 6. June, 1917.

Bird Life in the Firing Line. By Dr. N. S. Lucas.

Spectacled Owl (*Syrnium perspicillatum*). By Miss E. F. Chawner.—
With plate.

Bird Notes. VIII, No. 7. July, 1917.

A Cruise in the S. Y. "Vectis."—To Norway in 1904.

The Emu. XVII, No. 1, July, 1917.

Cooper's Creek Tree Creeper (*Climacteris waitei*). By S. A. White.—
With colored plate.

Birds of the Rockingham Bay District, North Queensland. By A. J. Campbell and H. G. Barnard.—An annotated list of 187 species.

Procellariiformes of Western Australia. By W. B. Alexander.

Description of a New Sub-species of *Platycercus elegans* (Gmelin).
By Edwin Ashby.—*P. e. fleurieuensis* (p. 44), from the Fleurieu Peninsula, South Australia.

The South Australian Ornithologist. III, Part 3. July, 1917.

Tasmanian Field Notes. By Edwin Ashby.

Birds of the North and Northwest of Australia. By Gregory M. Mathews.

Notes on the Mallee Fowl (*Leipoa ocellata rosinae*). By T. P. Bell-chambers.—Much detailed information on the nesting, with temperatures of the mound and periods of incubation of the eggs.

The Austral Avian Record. III, No. 4. July 21, 1917.

New Subspecies and Notes on Species. By G. M. Mathews.

The Rediscovery of two Lost Birds. By G. M. Mathews.—*Nesomalurus leucopterus* and *Diaphorillas textilis*, obtained by Mr. Tom Carter.

Notes on Some Extra-limital Parrot Names. By G. M. Mathews.

Silvester Diggles, Ornithologist. By G. M. Mathews.—Portrait and description of the parts of his 'Ornithology of Australia.'

Revue Française d'Ornithologie. IX, No. 98. June 7, 1917. [In French.]

Study of a Collection of Birds from Matto Grosso. By A. Menegaux (concluded).

Ostrich Raising in Madagascar. By C. Riviere (continued).

On *Ruticilla tithys* and *R. cairii*. By A. Menegaux. The latter is merely an early plumage stage of the former.

Ornithologische Monatsschrift. 40, Nos. 7 to 11. July to November, 1915. [In German.]

Observations in the Vicinity of the Moritzburg Ponds 1906-1914 (continued through all the numbers).

Ornithological Articles in Other Journals.¹

Kent, D. E. Colony of Virginia and Sora Rails (at Bridport, Vt.). (Bull. No. 3, Vermont Botanical and Bird Clubs, April, 1917.)

Howe, Inez Addie. Nesting of the Connecticut Warbler [at St. Johnsbury, Vt.] (*Ibid.*).—This record, far away from the known breeding range of the species, is so remarkable, and the presence of Mourning Warblers so suggestive, that we cannot but wonder if the observer is familiar with the plumages of the two sexes of the latter.

Morgan, E. D. Goshawks Unusually Numerous. (*Ibid.*) [At Woodstock, Vt.].

M(urphy), R. C. The Sooty Albatross Group [in the Brooklyn Museum]. (The Brooklyn Museum Quarterly, IV, No. 2, April, 1917.)

Berry, Wm. A Chair of Economic Ornithology. (Scottish Naturalist, No. 66, June, 1917.)—An interesting discussion of the problem of bird preservation.

Rintoul, L. J. and Baxter, E. V. Report on Scottish Ornithology in 1916 including Migration. (*Ibid.*, double number, 67 and 68, July–August, 1917.)—A valuable addition to this historic series which the Misses Rintoul and Baxter are so admirably continuing.

Beaupre, E. The American Golden Plover in Eastern Ontario. (Ottawa Naturalist, XXXI, No. 2, May, 1917.)

Saunders, W. E. Disappearance of the Blue Gray Gnatcatcher. (*Ibid.* No. 3–4, June–July, 1917.)

Smith, Bertram G. Peculiar Nesting Behavior of a Robin. (Seventeenth Rept. Mich. Acad. of Sci.)—The birds built five nests on successive steps of a fire escape. Two were completed and two eggs laid in one and one in the other. The bird incubated them alternately but soon deserted them both. The author considers that the similarity of the steps rendered the bird unable to recognize its nest site.

Oberholser, H. C. *Piranga rubra rubra* in Colorado. (Proc. Biol. Soc. Wash., XXX, July 27, 1917, p. 122.) The record of *P. r. cooperi* proves to be based on a specimen of *rubra*.

Oberholser, H. C. Autumn Water-bird Records at Washington, D. C. (*Ibid.*, p. 122.)

Oberholser, H. C. Mutanda Ornithologica. II. (*Ibid.*, pp. 125–126.)—Five names, mainly of parrots, are changed on account of being preoccupied. *Nasiterna chloroxantha* (p. 126) is proposed in place of *N. pygmæa*.

Hollister, N. The Black Vulture in the District of Columbia and

¹ Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Maryland. (*Ibid.*, p. 123.)—The two records are of especial interest in connection with that of Dr. Phillips (General Notes, *antea*).

Todd, W. E. C. New Genera and Species of South American Birds. (*Ibid.*, pp. 127–130.) *Idiospiza* (p. 127), type *Linaria inornata* Lafr.; *Myospiza humeralis meridanus* (p. 127), Guarico Lara Ven.; *Sporophila lineola restricta* (p. 128), Gamarra, Magdalena, Col.; *Sporathraupis cyanocephala hypophæa* (p. 128), Paramo de Rosas, Ven.; *Thlypopsis fulviceps intensa* (p. 128), La Palmeta, Santander, Col.; *Tachyphonus luctuosus panamensis* (p. 128), Gatun, Panama; *Diglossopsis cærulescens saturata* (p. 128), La Palmeta, Santander, Col.; *Myrmeciza læmosticta palliata* (p. 129), La Palmeta, Santander, Col.; *Hylophylax nævioides subsimilis* (p. 129), Jaraquil, Bolivar, Col.; *Pæcilurus* (p. 129), type *Synallaxis candæi*; *P. atrigularis* (p. 129), Gamarra, Magdalena, Col.; *Brotogetis jugularis exsul* (p. 129), Sierra de Carabobo, Ven.

Bartsch, Paul. Additions to the Haitian Avifauna. (*Ibid.*, pp. 131–132.)—*Porzana flaviventris hendersoni* (p. 131) subsp. nov.; *Dendroica petechia albicollis* (Gmel.), established as a distinct race and eleven other species added to the fauna of the country.

Patten, C. J. Western Black-eared Wheatear (*Ænanthe hispanica hispanica*) on migration obtained on Tuskar Rock: A Bird new to Ireland. (Novit. Zool. XXIV, 1917, p. 1–16.)

Hartert, Ernst. Notes on Gamebirds. (*Ibid.*, pp. 275–292.)—*Caccabis* gives way to *Alectoris* on grounds of priority.

C. petrosus becomes *A. barbara*, Gmelin's *Tetrao petrosus* being *Ptilomachus fuscus* which therefore must be called *P. petrosus*.

The Greek Partridge should be *A. græca* Meisner, while two new races are described: *A. g. cypriotis* (p. 278) and *A. g. falki* (p. 280), from Cyprus and Russian Turkestan respectively.

A. heyi intermedia (p. 282), South Arabia; *Perdix p. italica* (p. 283), Chianti, Italy; and *P. p. armoricana* (p. 284), Rialle, France, are described as new.

Tetrao orientalis Linn. is fixed on the Sand Grouse which thus becomes *Pterocles orientalis* in place of *arenaria*.

Francolinus pondicerianus interpositus (p. 288), Oudh, India; and *F. bicalcaratus ayesha* (p. 291), Rabat, Morocco, are described as new.

Hartert, Ernst. Some Further Notes on *Anthreptes malaccensis*. (*Ibid.*, p. 323.)

Platt, Chas. On Color in Animals. (Wild Life, June, 1917.)—Both June and July issues also contain excellent photographs of birds—Bittern, Black-backed Gull and Swallow.

U[prich], F. W. A Bird Injurious to Rice. The Yellow Headed Cacique (*Agelaius icterocephalus* L.) (Bull. Dept. of Agr. Trinidad and Tobago, XVI, pt. I, 1917.)

Ingram, Geoffroy. Some Field Notes on the Nightjar. (Trans. Cardiff Nat. Soc. XLVIII, 1916.)

Clodius, G. Ornithological Report for Mecklenberg and Lubeck for

1912-1913. (Archiv. de Verein der Freunde der Naturgeschichte in Mecklenburg, Vol. 68, 1914.) [In German.]

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The worst feature of the whole situation is that the horrible name "*Passer herbulus*" proves to be a nomen nudum as originally proposed by Maynard and would have sunk into oblivion had not an innocent cataloguer of supposedly necessary changes in the A. O. U. Check-List, who abhorred the name, inadvertently added the two words necessary to give it status, and so not only perpetuated it but gained the opprobrium of being its author!

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CORRESPONDENCE.

Definite Localities.

EDITOR OF 'THE AUK':

In modern zoölogical work a knowledge of the geographic distribution of the various forms of animal life has become increasingly important. It is at least highly desirable, not to say essential, in systematic work, in the investigation of economic problems, in the enactment of protective legislation, and in practically every other phase of zoölogical activity. And the more exact this knowledge is, the greater its usefulness.

It is perhaps only those who make a special study of geographic distribution that realize to what extent ornithological literature is filled with *indefinite* data on the subject. A great many published records of occurrence are so inexplicit as to localities and dates as to be all but worthless. In the preparation of distributional maps and in the study of migratory movements the futility of indefinite records becomes particularly apparent. A case in point is a paper by Messrs. Philipp and Bowdish in the July issue of 'The Auk,' wherein the authors, for some unexplained reason, have failed to state any definite localities for a large number of breeding records, which would have been of real value if accompanied by proper geographical data. It is to be hoped that the authors will supply the desired data in full in a later issue of 'The Auk.'

Cases like the one just quoted suggest the urgent need for authors of ornithological papers to become impressed with the importance of supplying exact and detailed information as to localities and dates of occurrence.

There are unquestionably many of us who can add materially to the value of our papers by bearing in mind this need of definite records.

Very truly yours,

FRANCIS HARPER.

U. S. Biol. Survey, Washington, D. C.,
July 19, 1917.

[The editor feels responsible for the omission above referred to for had he noticed it and called the authors' attention to it, the desired information would surely have been furnished. For various reasons it may seem desirable to withhold the *exact* locality for the breeding of rare birds, but there can surely be no objection in publishing the county, which except in certain cases of varied topography would doubtless answer the needs referred to by Mr. Harper.—W. S.]

Appeal for Assistance in Work of the Biological Survey.

EDITOR OF 'THE AUK':

The Biological Survey, as is generally known, is engaged in compiling and collating distributional records of all North American birds and mammals. These records are compiled from all available published literature, from reports of field work by members of its staff, and from manuscript reports by voluntary observers throughout the United States and a large part of Canada. The Survey's file system of carded records doubtless constitutes the only source of fairly complete information regarding the distribution of North American birds and mammals, as at present known. As such it is constantly being consulted and utilized in the preparation of the Survey publications, the A. O. U. Check-List and its supplements, and the Indexes to 'The Auk,' as well as in various other ways.

The Biological Survey would take this occasion to invite all members of the A. O. U. to contribute bird migration reports and bird census reports for use in its work. Blanks for the purpose will be promptly sent to those who write for them. It is only by the accumulation of a vast amount of additional data that many problems in distribution and migration can be worked out satisfactorily. Reports from the South, West, and Pacific Coast are especially needed, and fall migration notes from the entire country are much to be desired. The importance of accuracy in all records can scarcely be over emphasized.

Since A. O. U. members are among the chief beneficiaries of this phase of the Biological Survey's work, it is hoped that this request for their coöperation will not go unheeded.

Very truly yours,

E. W. NELSON,
Chief, Biological Survey.

"The Way to Study Birds."

EDITOR OF 'THE AUK'

After reading several of the reviews of my recent book, 'The Way to Study Birds,' I have been tempted to write a few words in explanation. Apparently in my preface I rather failed in my attempt to give an adequate idea of the book's purpose. In this connection, however, I have perhaps my best clue furnished by a reviewer in 'The Nation,' who writes that I have given "a handbook to the study of a handbook." This then was my object: to make clear the way for the beginner so that the many ornithological "handbooks" could be of use to him; so that he can be brought to the viewpoint where he is able to advantageously employ them. To continue, as 'The Nation' amits, my book is "no substitute for the amply illustrated manuals by Chester Reed and others." I have used very much these same words myself, as perhaps anyone who has really read my book will remember. It is to make possible an understanding of the "manuals", and to give a course of study, which followed throughout holds good, that I wrote my book. But I did not consider it necessary to give more than fifty examples of my plan. By that time, an *average* person is able to understand the work and continue by self-instruction.

Unfortunately, in their review of my book, 'The Nation' made two scientific errors of fact. The Turkey Vulture or "*buzzard*" is a common summer resident throughout the area covered by my book and is not "entirely unknown" in any part for which it was written. This is similarly true of the Starling. It is, I hope, unnecessary to refute the other fact, as expounded by 'The Nation,' that, for example, an English Sparrow is no more abundant than a Belted Kingfisher. These are, however, minor mistakes, and my book was written, as so well expressed, with the object of being a handbook for the study of a handbook.

J. DRYDEN KUSER.

Bernardsville, N. J., August 30, 1917.

Concealing Coloration.

EDITOR OF 'THE AUK':

Here is Henry Drummond's paragraph on the concealing power of zebras' stripes, with a perfectly correct analysis of the thing's principle. I should have drawn attention to it long ago had I before now learned of its existence.

"When we look, for instance, at the coat of a zebra with its thunder-and-lightning pattern of black and white stripes, we should think such a conspicuous object to court, rather than elude, attention. But the effect is just the opposite. The black and white somehow take away the sense

of a solid body altogether; the two colors seem to blend into the most inconspicuous grey, and at close quarters the effect is as of bars of light seen through the branches of shrubs. I have found myself in the forest gazing at what I supposed to be a solitary zebra, its presence betrayed by some motion due to my approach, and suddenly realized that I was surrounded by an entire herd which were all invisible until they moved.

"The motionlessness of wild game in the field when danger is near is well known." (Henry Drummond, D. D., in 'Tropical Africa,' 1888.)

This antedates all my writing on concealing coloration, and is the only publication that I know that does so.

Those European armies' universal adoption of concealment-by-pattern of snipers, autos, tanks, tents, etc., adds interest to the study of this universal animal-world principle, which the English and the Swiss naturalists assure me these armies have all got from my book.

It is somewhat amusing that while Europe's naturalists all read, and ultimately accepted my book, as I have heard from the English and the Swiss, and while thirty million or more soldiers are practicing it to save their lives, the American naturalists mainly continue in ignorance even of what it is that I state. Because I naturally dwell on the tremendous evidence that this practically universal concealing effect of animals' patterns *is no accident*, the American naturalist refuses to accept this inference and misses my SCIENTIFIC POINT. The artist's science is that of the laws of visibility; and all the artists in the world will tell him that my scientific point, viz. that patterns on an object *inevitably lessen its distinguishability* is straight goods.

Add to this, nature is practically always doing these patterns in colors that counterfeit, beyond all human painter-power, one or another of the wearer's typical backgrounds.

Must one believe that the average American is so much less intellectual than Europeans that while those millions of soldiers are all protecting themselves with this vast concealing device, the American naturalist can not even see the absolutely antipodal difference between *detecting* an object and identifying it by its particular form of concealment-pattern *after* he has detected the object itself!

Yours truly,

ABBOTT H. THAYER.

Monadnock, N. H., June 21, 1917.

NOTES AND NEWS.

DR. EMIL AUGUST GOELDI, a Corresponding Fellow of the American Ornithologists' Union since 1903, died suddenly at Bern, Switzerland, July 5, 1917, in the 58th year of his age. He was born at Ennetbühl, Canton of St. Gall, Switzerland, August 28, 1859. He studied at the Zoological Station at Naples and was an assistant of Prof. Ernst Haeckel at the Zoological Institute at Jena. In 1884 he went to Brazil and became associated with the museum in Rio de Janeiro. After the fall of the Emperor Dom Pedro II, in 1889, he retired from this position and lived for four years in the state of Rio de Janeiro. About 1894 he founded the museum in Para, now known as the Museu Goeldi. This institution which comprised not only a museum but also a zoölogical garden and a botanical garden was taken over by the state a few years later and Goeldi then became honorary director. In 1905, after 20 years of life in the tropics, he returned to Switzerland and took up his residence in Bern where, since 1908, he has been professor of zoölogy in the Cantonal University. He visited the United States in August, 1907, at the time of the meeting of the Seventh International Congress of Zoölogy in Boston.

Dr. Goeldi has published a number of papers in English, German and Portuguese on various branches of zoölogy, but chiefly on mammals, birds and fishes. He is also the author of a monograph on the mosquitoes of Brazil.¹ His best known publications on birds are his 'Aves do Brazil,' in two volumes, 1894-1900, and the supplement to this work entitled 'Album de Aves Amazonicas,' in three parts, 1900-1906, containing colored illustrations of about 400 species. He also contributed several papers to 'The Ibis,' including an important one on the 'Ornithological Results of a Naturalist's Visit to the Coast Region of South Guyana,' Brazil, in 1895. He was especially interested in studying the habits of birds and was the discoverer of the parasitic habits of *Cassidix oryzivora*. He was also deeply interested in bird protection and during his residence in Rio de Janeiro and in Para endeavored to secure the enactment of legislation for the protection of species which were being ruthlessly slaughtered for the millinery trade. Two of his memorials to the Governor of the State of Para were later translated into English and published under the title 'Against the Destruction of White Herons and Red Ibises on the Lower Amazon,' Para, 1904. The museum which bears his name will long remain a monument to the energy of Dr. Goeldi in encouraging natural history work in Brazil.—T. S. P.

ALFRED JOHN NORTH, a Corresponding Fellow of the American Ornithologists' Union since 1902, died of heart failure at Sydney, Australia, May 6, 1917, only five months after the death of his former chief and associate

¹ In this connection his portrait was published in Pop. Sci. Monthly, Aug. 1915, p. 171.

Dr. E. P. Ramsay. He was born in North Melbourne, Australia, June 11, 1855, and was educated in the public and grammar schools of Melbourne. Later he worked at the jeweler's trade for some years. At an early age he developed an interest in ornithology which was stimulated by visits to the National Museum at Melbourne and by the officers of this institution, Sir Frederick McCoy the director, and John Leadbeater in charge of ornithology. In 1878 he corresponded with Ramsay and eight years later went to Sidney to arrange the Ramsay collection of birds and the collection of eggs of the Australian Museum. After spending several months at this task he was asked to prepare the 'Descriptive Catalogue of the Nests and Eggs of Birds found Breeding in Australia and Tasmania' which was published in 1889. About this time he was appointed an assistant to the curator, Dr. Ramsay, and in 1891 was made ornithologist of the museum, a position which he retained until his death.

He has published many papers on the birds of Australia, among the more important of which are: 'Aves of the Horn Scientific Expedition to Central Australia,' 1896, 'List of Birds collected by the Calvert Exploring Expedition in Western Australia,' 1898, and a new and greatly enlarged edition in 4 volumes of his 'Nests and Eggs of Birds found Breeding in Australia and Tasmania,' 1901-14. His papers have appeared chiefly in the Proceedings of the Linnean Society of New South Wales, the 'Records' of the Australian Museum, the 'Agricultural Gazette' of New South Wales, the 'Victorian Naturalist,' 'The Ibis,' and the 'Proceedings' of the Zoological Society of London.

North devoted much attention to detailed studies of the life histories of certain species which occur in the immediate vicinity of Sydney. He was very careful in his statements and in some respects was one of the ablest ornithologists that have studied the birds of Australia. His labors have been commemorated in the names of two genera of birds, *Northiella* and *Northipsitta*, and in the Northern Banksian Cockatoo (*Calyptorhynchus banksii northi*), all described by Mathews in 1912.—T. S. P.

REV. WILLIAM ROGERS LORD, an associate of the American Ornithologists' Union since 1901, died in Dover, Mass., February 2, 1916, in the 69th year of his age. He was the son of Daniel Miner and Eliza Ann (Hardy) Lord, and was born in Boston, Mass., May 6, 1847. His early education was received at Williston Seminary, Mass., and in private schools in Brooklyn. He graduated from Amherst College with the degree of A. B. in 1875 and from the Union Theological Seminary, in New York, in 1878. During the next 17 years he held several pastorates in the east at Riverdale-on-Hudson, Wollaston Heights, Mass., and in Boston. From 1895 to 1898 he was located at St. Paul, Minn.; from 1899 to 1901 at Portland, Ore.; from 1902 to 1907 at Rockland, Mass.; and since 1909 at Dover, Mass.

Mr. Lord was deeply interested in birds and especially in popularizing

bird study and in bird protection. During his residence in Oregon he collected the material for 'A First Book upon the Birds of Oregon and Washington' which was published in 1901 and appeared in a revised edition in 1902. This book was promptly placed in the list for supplementary reading in the schools of Oregon by the State Text Book Commission. During the organization of the Oregon Audubon Society he took an active part in the work and gave a number of talks on birds to some 18,000 public school children and 4000 adults. He was a ready and pleasing speaker, and a frequent attendant at meetings of the Union where, through his genial manner, he made a large circle of friends.—T. S. P.

DR. BERT HEALD BAILEY, an Associate Member of the American Ornithologists' Union since 1913, died at Cedar Rapids, Iowa, June 22, 1917, from an abscess in the spleen. He was born at Farley, Iowa, May 2, 1875. Dr. Bailey graduated from Coe College in 1897 and received his master's degree from the same institution in 1900. In 1900 he also completed his course and received an M. D. degree from Rush Medical College, Chicago. He married Anna Wright Condit, of Des Moines, December 26, 1900. In September, 1900, he became Professor of Zoölogy and Curator of the Museum of Coe College, a position which he held at the time of his death.

He published a small volume entitled "200 wild Birds of Iowa" in 1906, and was the author of numerous short papers and notes on mammals and birds which appeared from time to time in the 'Proceedings' of the Iowa Academy of Science and in 'The Auk'. In addition, many valuable notes contributed by him appear in Anderson's 'Birds of Iowa.' At the beginning of his last illness, Professor Bailey was on leave of absence and was engaged in research along ornithological lines at the University of Iowa. He was especially interested in the hawks and owls and had nearly completed a paper dealing with the distribution and habits of the species found in Iowa. He was also engaged in collecting data for a work on the mammals of the State. He was diligently engaged in building up a good working college museum at Coe and outlined his ideas as to what such a museum should contain in a paper entitled 'The Building and Function of the College Museum,' printed in the 'Proceedings' of the Iowa Academy of Science for 1915. Professor Bailey was a keen and tireless worker and his untimely death is a distinct loss to ornithology in a State where workers of his ability are all too few. He was a member of the Wilson Ornithological Club and a Fellow of the Iowa Academy of Science.—I. N. G.

FRANCIS WINDLE, an associate member of the American Ornithologists' Union, died at his home in West Chester, Pennsylvania on February 24, 1917, in his 72nd year.

Mr. Windle was born in West Marlboro, Chester County, Pennsylvania. He lived most of his life in West Chester, having received his education in the schools of his native county and at the University of Michigan, at which latter place he took his law course. He was admitted to the bar at West

Chester about thirty-five years ago, and practiced his profession there for nearly twenty years.

At the outbreak of the Civil War Mr. Windle ran away from school to enlist in Company E 152nd Pennsylvania Heavy Artillery, serving as a private for a year and a half.

In 1879 Mr. Windle was married to Miss Margaretta E. Thatcher who survives him.

Owing to poor health Mr. Windle found it necessary to give up the practice of law and seek out door employment. He secured a position with one of the extensive nurseries at West Chester. Here his wide knowledge of botany acquired during his frequent outing trips, which constituted his chief recreation for years, proved a valuable asset. During his recreational activities his time was about equally divided between his study and observation of plants and birds, with the result that he became skilled in both botany and field ornithology.

For several years Mr. Windle taught biology at Darlington Seminary, West Chester, and also did some teaching at the State Normal School in the same place.

For about eleven years prior to his death he was connected with the Bureau of Zoölogy, Department of Agriculture of Pennsylvania, with headquarters at Harrisburg. He became assistant Orchard Inspector for the eastern end of Pennsylvania, and while acting in this capacity was made a member of the Chestnut Blight Commission, and later of the White Pine Blister Rust Commission. The duties of these positions took him all over the eastern end of the state and kept him out of doors where he could indulge his passion for botany and ornithology. He was a member of the Philadelphia Botanical Club and of the Delaware Valley Ornithological Club and kept constantly in touch with men in these fields.—C. E. E.

AN OBITUARY notice of Covington Few Seiss for many years an Associate of the Union, who died at Philadelphia, September 5, 1915, will be found in 'Cassinia' for 1916. A notice of Charles S. Welles, an associate who died February 24, 1914 is to be found in 'Entomological News' for that year.

1847-1917.—In 'The Auk' for July reference was made to the unique gathering of members of the A. O. U. at Plummer's Island, Md., on April 20, 1917, in honor of the 70th birthday of the secretary of the Union. In addition to Mr. John H. Sage several other members of the Union reach three score and ten this year. These members are: Mr. G. Frean Morcom (Mar. 16), Dr. Anton Reichenow, editor of the 'Journal für Ornithologie' (Aug. 1), Dr. Louis Bureau of Nantes, France (Nov. 18), and Victor Ritter von Tschusi zu Schmidhoffen, the eminent Austrian ornithologist (Dec. 28). Mention should also be made of Mrs. Dana Estes (Sept. 4), sister of the late Dr. Elliott Coues and formerly Miss Grace Darling Coues, in whose honor Grace's Warbler was named.

Seven others born in 1847 did not enjoy as long a span of life but nevertheless left their names indelibly impressed on the records of ornithology. The foreign list includes Dr. R. Bowdler Sharpe, author of the 'Hand List' and 11 volumes of the 'British Museum Catalogue of Birds,' Dr. Emil Holub, the eminent African explorer, and the late Earl of Crawford who in voyages in the 'Valhalla' made considerable additions to our knowledge of the birds of the West Indies. The American names include Lucien M. Turner, who collected in Alaska, Joseph H. Batty, taxidermist and field collector, Miss Genevieve Estelle Jones who initiated the great work on the nests and eggs of the birds of Ohio, and Albert Willcox, benefactor of the National Association of Audubon Societies, whose legacy placed the work of the association on a permanent foundation. The class of 1847 has extended its energies into diverse fields and filled an important place in the progress of ornithology. Scarcely any other single year has produced as many active workers in this field, and it is interesting to note that 7 of the 13 names above mentioned are enrolled among the members of the A. O. U.—T. S. P.

THOSE who are interested in the problem of animal coloration which under the caption of 'protective' or 'concealing,' coloration has figured quite extensively in ornithological literature may read with profit an article by W. H. Longley in the 'Journal of Experimental Zoology,' Vol. 23, No. 3, entitled 'Studies upon the Biological Significance of Animal Coloration.' His work is based upon the reef fishes.

THE time has arrived when all members of the A. O. U. should make arrangements to be present in Cambridge, Mass., on November 13-15, the dates fixed upon for the thirty-fifth stated meeting of the Union.

A number of members are serving their country in one capacity or another and some of them will of course be unable to take part; the great majority of the membership however can attend and we would earnestly urge them to be present. Cambridge offers unusual attractions to the ornithologist and the generous hospitality extended to the Union on previous occasions is a matter of record. In England, Australia, France and Russia ornithological activities have not been permitted to come to a standstill on account of the war, and those who have not been called to service have taken it upon themselves to continue the meetings and publications without cessation through these trying times, so that their favorite science may not suffer. It would seem that we in America could not do better than to follow their example.

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ERRATA.

- Page 33, line 35, for **vallisineria** read **valisineria**.
" 40, " 31, for PIGMY read PYGMY.
" 49, " 16, for *nanus* read *nana*.
" 66, " 37, for *garrulus* read *garrula*.
" 89, " 1, for *C. v. gundlachii* read *C. m. gundlachii*.
" 136, " 10, for "Bec-sie" read "Bec-scie."
" 155, " 18, for northward read southward.
" 235, " 37, for *Cetrastes* read *Tetrastes*.

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MEETINGS OF THE American Ornithologists' Union

Since its organization in 1883 the American Ornithologists' Union has held one special and 34 annual meetings.

These meetings have been held in six cities: 11 in New York, 10 in Washington, 7 in Cambridge, (including 1 in Boston), 5 in Philadelphia, and 2 (one special) in San Francisco. Twenty-seven meetings have been held in November and eight in other months.

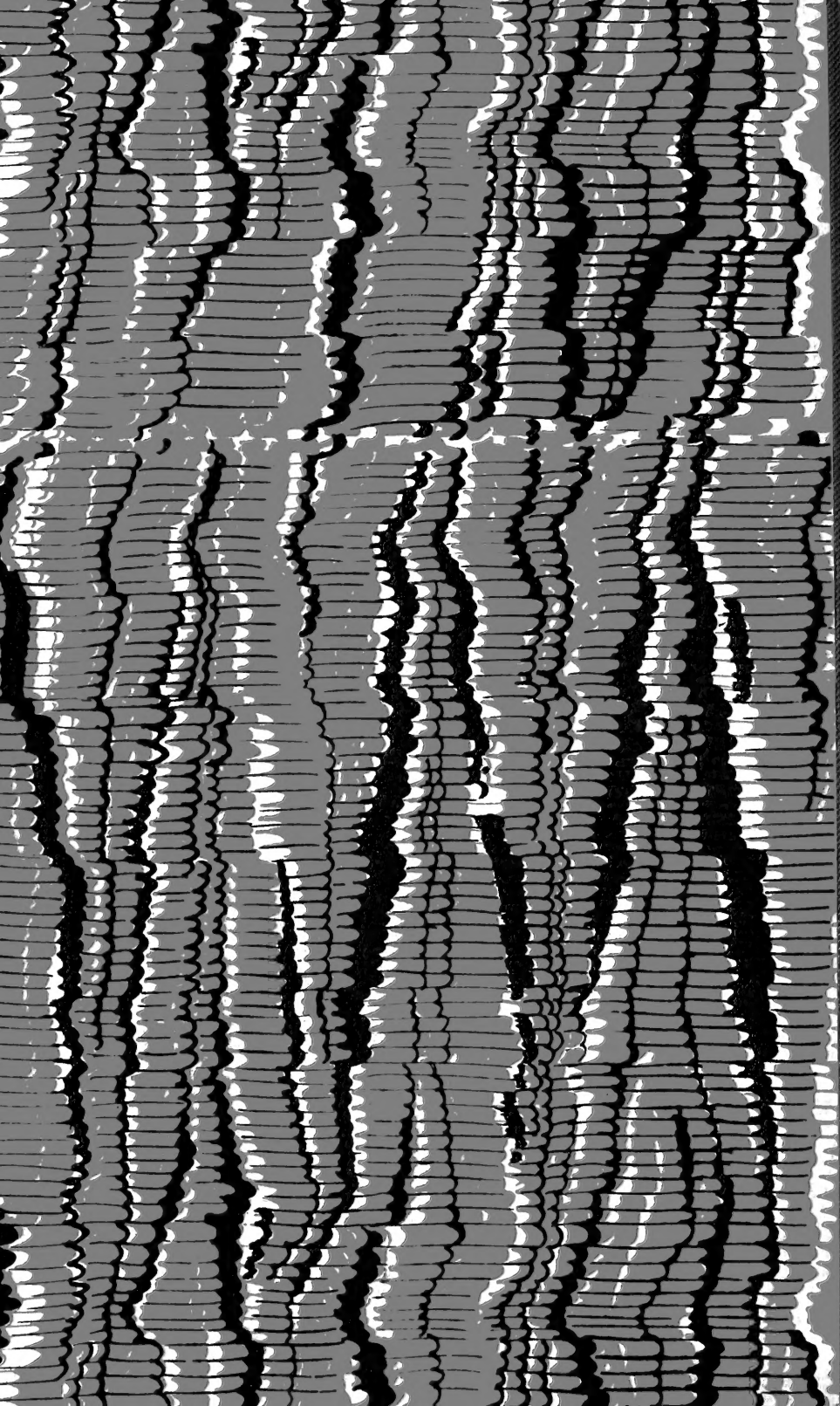
The number of Fellows (known as Active Members prior to 1902) has always been limited to 50 and the number present at any meeting has varied from 7 to 28. The attendance of other classes of members in recent years averages over 100.

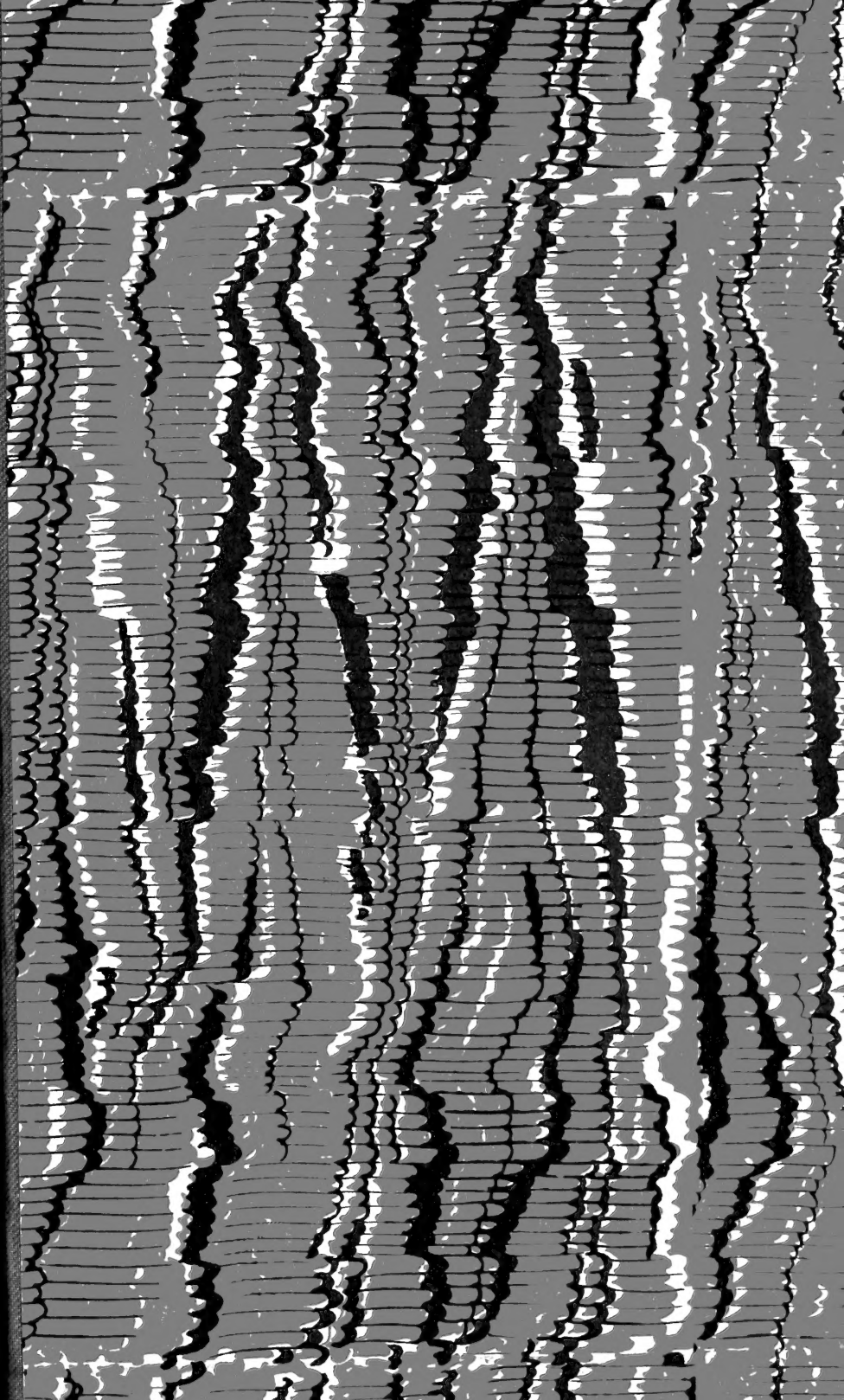
Meeting	Date	Place	Fellows Present	Total Membership
1	1883, Sept. 26-28	1st New York	21	23
2	1884, Sept. 30-Oct. 2	2d New York	16	143
3	1885, Nov. 17-18	3d New York	16	201
4	1886, Nov. 16-18	1st Washington	20	251
5	1887, Oct. 11-13	1st Boston	17	284
6	1888, Nov. 13-15	2d Washington	20	298
7	1889, Nov. 12-15	4th New York	20	400
8	1890, Nov. 18-20	3d Washington	20	465
9	1891, Nov. 17-19	5th New York	14	493
10	1892, Nov. 15-17	4th Washington	20	557
11	1893, Nov. 20-23	2d Cambridge	17	582
12	1894, Nov. 12-15	6th New York	15	616
13	1895, Nov. 11-14	5th Washington	19	667
14	1896, Nov. 9-12	3d Cambridge	14	673
15	1897, Nov. 8-11	7th New York	18	679
16	1898, Nov. 14-17	6th Washington	21	695
17	1899, Nov. 13-16	1st Philadelphia	16	744
18	1900, Nov. 12-15	4th Cambridge	19	748
19	1901, Nov. 11-14	8th New York	18	738
20	1902, Nov. 17-20	7th Washington	25	753
20a	1903, May 15-16	1st San Francisco	7	—
21	1903, Nov. 16-19	2d Philadelphia	19	775
22	1904, Nov. 28-Dec. 1	5th Cambridge	17	808
23	1905, Nov. 13-16	9th New York	17	860
24	1906, Nov. 12-15	8th Washington	24	750
25	1907, Dec. 9-12	3d Philadelphia	20	850
26	1908, Nov. 16-19	6th Cambridge	17	888
27	1909, Dec. 6-9	10th New York	19	866
28	1910, Nov. 14-17	9th Washington	23	897
29	1911, Nov. 13-16	4th Philadelphia	18	887
30	1912, Nov. 11-14	7th Cambridge	18	929
31	1913, Nov. 10-13	11th New York	28	992
32	1914, Apr. 6-9	10th Washington	27	1101
33	1915, May 17-20	2d San Francisco	11	1156
34	1916, Nov. 13-16	5th Philadelphia	26	830*

The next regular meeting — the 35th Stated — will be held at Cambridge, Nov. 13-15, 1917.

* Decrease due mainly to change of date from spring to fall making 18 months without an election. 180 were added at the Philadelphia meeting.







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